

# The Commercial Car Journal

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## *The Proper Adaptation of*

# THE HEAVY-DUTY MOTOR TRUCK

*The Prospect Should be Sold on the Advantages of Buying a Truck of Sufficient Capacity to Eliminate the Excuse of Overloading*

**W**HENEVER the term heavy duty truck is used, it is generally surmised that this class of vehicle includes only the exceptionally heavy capacity truck—as for instance, the five tonner or over. The present day application of motor trucks to all kinds of service makes his definition somewhat incomplete. Heavy duty work really includes all truck operation where trucks of anywheres from two tons and over are employed. There are many two and three and a half ton trucks in daily use that are rendering remarkable service, and performing work of such a character, which rightfully entitles them to the classification of heavy duty trucks. These trucks incidentally are the ones that are making motor truck history and are responsible for the great amount of inter-city transportation and the great amount of heavy hauling work in connection with the building trades, highway construction and the multitudinous endeavors where transportation, via the road, is carried on.

### Application of Vehicle Essential

The point we wish to impress upon the dealer is that regardless of the greater percentage of lighter vehicles that are being used in the retail end of any particular business, their is a constant definite demand for the heavier vehicle, so that the dealer should not lose sight of the fact that although the retail end of a certain field may at present offer a more ready or attractive market for the light speed type vehicle—the wholesale end of that particular field must not be overlooked.

It is also because of the fact that many dealers are today concentrating their efforts on

the sale of the light weight low priced vehicle, that we wish to caution the dealers as a whole to carefully consider the customers' requirements. Ever since the light weight vehicle has come into prominence many dealers have somewhat neglected the heavier models. It is but natural that the dealer and his salesmen will work along the lines of least resistance. If the dealer finds that the light jobs sell so much more readily than the heavier models he will not lose time in pushing the light jobs—there is a rea-

son for this. The main consideration in the sale of a truck these days seems to be the price. If a two and a half ton job could be manufactured nearly as cheap as a one ton, more than likely the average purchaser would select the heavier model. He would reason along the lines, that, the heavier vehicle would take care of all possible increases in his transportation requirements for some time in the future, even though his present business did not warrant the larger vehicle. But here the price factor enters. The purchaser buys a light capacity job, because the price is cheaper and because he doesn't see where he needs anything heavier than a ton job. The tendency of the buyer is to get as much truck for as little money as possible. He figures that by getting a light capacity truck when he really ought to have a two or two and a half ton job, he is going to save money. He does probably on first cost, but not eventually, simply because he will sooner or later overload the light vehicle way beyond its rated capacity, in consequence of which the cost for service and repair work will more than offset the operating cost of a heavier vehicle and its initial cost.

### Sell Him Something—is Bad Business

The dealer should always keep this in mind: There is a definite class of transportation for which the speed type truck is pre-eminently fitted. This also applies equally well to the heavier vehicle. In order to give ideal service to his customer, most every merchant or business establishment could perhaps use both a speed truck and a heavier vehicle provided that the volume of goods



Even After the Laborious Construction of These Lumber Trails the Task of Transporting the Lumber Through the Use of Heavy-Duty Trucks is No Light Day-Dream

to be transported would warrant the use of the two or more trucks. In large establishments where anywhere from three trucks up to a few hundred are employed, all sizes of vehicles are in evidence.

But, **THERE ARE TOO MANY CASES ON RECORD** where the dealer, anxious to make a sale, has sold a speed job to the purchaser when he really should have sold him a truck of twice the capacity. Here the dealer may make the assertion that it would be considered good business to sell the customer another light job to take care of the extra work. The question is, would such a transaction work out to the benefit of the owner, or would the owner eventually become another knocker? It is absolutely true that many trucks are misplaced simply because the salesman or the dealer saw the possibility of selling his customer a truck of smaller size than he should have had, because the price was more reasonable or attractive, and also because the factor of safety was greatly overrated.

"Yes, she's rated at a ton—but she'll stand a great deal of overloading. The engineers at the factory have taken care of that. She'll easily carry two tons." Every truck buyer has heard such remarks, and lots of dealers have become accustomed to saying this so often that they have lost sight of the fact that they are not only losing profits, but are really underselling the customer. The customer certainly would be more satisfied if he had a truck which would not be in the repair shop so often—due to breakdowns caused by overloading of a vehicle which was not designed for heavy duty service. In other words, if the dealer would sell the customer a slightly larger sized vehicle than he really needs, he would be selling what might be termed "truck insurance." Any truck which is carrying less or not more than its rated capacity will most assuredly last longer than a truck that is being continuously overloaded.

#### Analysis Should be More Detailed

Our reason for referring to the overloading subject in this article is simply to show the dealer that he should carefully investigate the services for which the truck will be used. The transportation analysis is many times skimmed over too lightly. The salesman may ask the customer a few questions and then guess that he needs about a one and a half ton job. Or if the dealer is handling a light job, the salesman will not lose the opportunity to sell the customer on the speed factor. He will immediately proceed to demonstrate to the customer that the lighter vehicle will take care of all his requirements

because it will be capable of greater speed than the heavier machine and therefore it can deliver the same amount of goods during the same time. He infers that even though it cannot carry as large a load as the heavier machine, it gets around a whole lot faster. But one of the factors which enters here is the delivery radius in which the vehicle operates. If the truck is to be used mainly for making deliveries within the speed restricted areas or the congested business districts in the city, the speed factor would automatically be eliminated. If the vehicle, however, is to be used for deliveries in suburban territory or in the open country then the speed job would have the advantage because of its speed.

In selling motor truck transportation there are many factors, of course, which should be considered besides the speed or the carrying capacity of the vehicle. Maintenance costs, fuel consumption, tires, taxes, drivers' wages, etc., etc., all have a direct bearing upon the size of the vehicle purchased. And the owner has a right to give these points full consideration before he finally decides to purchase a certain model.

#### Heavy-Duty Truck in All Industries

The dealer must not forget that the bulk of our highway transportation is done by the heavy duty truck. Intercity haulage and rural express lines use  $2\frac{1}{2}$  to  $3\frac{1}{2}$  ton vehicles almost exclusively. In the building trades, mining and lumbering industries, the heavy duty truck is rendering exceptional service. Heavy duty trucks are being used in almost every industry in this country. Wherever the transportation problem calls for continuous, hard service the heavy duty truck is found. It is cutting down the transportation expenses for the railroads in handling less than carload package freight. There are so many fields in which the heavy duty truck is doing exceptional work, that the individual who believes that the heavy vehicle will be eventually supplanted on our highways by light vehicles is simply misinformed. We do not wish to intimate or be misunderstood regarding the future of the light job. The speed type truck has been designed for a specific class of service and undoubtedly

it performs that work better and cheaper than the heavy duty truck.

The economic factor has been treated too lightly by the motor truck sales fraternity. The manufacturer, merchant, and every business house that has need for a truck is carefully considering the cost of delivery. It is therefore essential that a more thorough analysis should be made and the right sized vehicle selected, rather than presuming that a cursory investigation of the prospect's transportation problems is all that is required.

Motor trucks will be sold in the future more and more with respect to the specific duties which they must perform rather than with the hastily conceived ideas as to what capacity is best fitted for the work in hand, or with too much reference to the first cost.

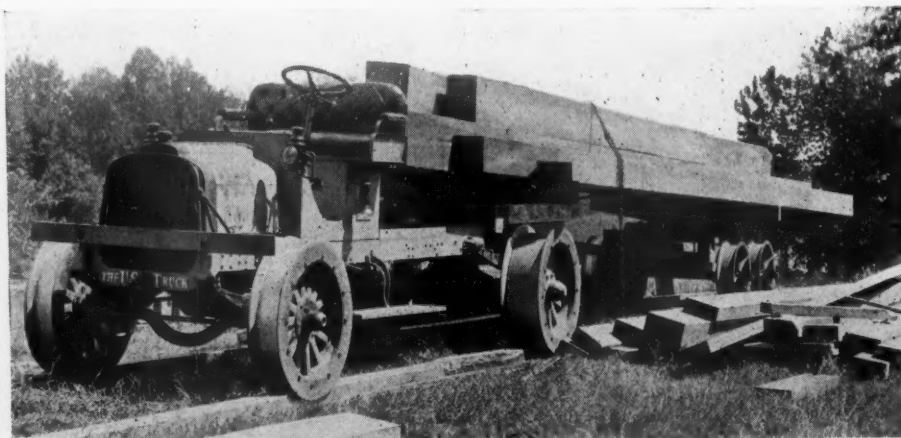
The larger manufacturers are giving this subject some serious thought these days. They realize that it is to the best interests of the dealer and themselves that every truck going into service should help to build up the dealer's reputation. Another manufacturer has recently put this matter squarely up to his dealers. The concern in question has recently advised its dealers that henceforth its product is going to be merchandised as "transportation" instead of trucks.

The regular model number has been eliminated and instead the term "Units" will apply. By this company's plan the road conditions, the maximum load to be handled at any time, the average weight to be handled, the grades on which the truck is to operate and other vital factors will be taken into careful consideration, and no manufacturer's guarantee will be effective unless the dealer forwards the analysis form properly made out, to the factory. Under this "Unit" plan, a truck is sold according to the work to which it is to be applied. For instance, take "Unit" 30. Under ideal road conditions and for light duty work, it can be sold as a light duty  $2\frac{1}{2}$  ton truck. The maximum capacity is  $2\frac{1}{2}$  tons pay load. But under unfavorable road conditions and for heavy duty work as a  $1\frac{1}{2}$  ton truck only.

The caution plate on each chassis is left blank, with respect to the capacity.

When the dealer sells and delivers a chassis to the customer he fills in the capacity figures, provided he first has forwarded to the factory the form showing installation analysis. Thus all are protected.

This not only encourages the dealer to sell his product correctly, but it protects the dealer and the manufacturer from the careless owner who overloads, and who has no consideration for the actual conditions under which the truck is operating.



**Necessity is the Mother of Invention. Transportation in This Lumber Region Necessitated Special Equipment for Adapting the Truck and Trailer for Negotiating Soft Ground With Heavy Loads**

The above illustration shows a United States heavy-duty truck and trailer provided with specially constructed flanged wheels for traveling a plank track



# The "Buying Vacation" is Over!

## Distributors All Over the Country Report That Truck Sales Are Encouraging. More Intelligent Sales Work is Bringing Results

By A. V. COMINGS

**D**ISTRIBUTORS of the better class of motor trucks are feeling very much encouraged over the outlook for 1922, for January and February have proved the best months they have had, in point of sales, for many and many a day. In a recent swing around the circle in the middle west I found motor truck distributors very optimistic, and their optimism was built on the very best of foundations—volume of sales made and a big increase in inquiries from concerns and individuals who will shortly be in the market.

There are many reasons for this, but it is not improbable that one of the most cogent reasons lies in the long buying vacation indulged in by motor truck users all over the country. In spite of the slump in the nation's business, there has been enough real business left in this country to keep a good many hundreds of thousands of motor trucks moving, and these have been wearing out with the

same regularity that any piece of machinery wears out when used.

So good does business look to a certain Chicago branch manager for one of the well known truck companies, that he has recently put on six road men to go out and build up his badly shattered dealer organization throughout the middle west. He has faith in the early resumption of the motor truck business and he is going to get his share.

The business man who doesn't get away from his own town is very apt to think, because of his own decreased business, that the country is in a state of stagnation.

Let this man travel up and down the length and breadth of the United States, however, and he will be surprised at the signs of activity everywhere, for factories **ARE** in production, business houses **ARE** buying and selling, people **ARE** living 24 hours a day, with all that that living entails. And while production is less, and

business is less, and people aren't living as extravagantly—well, this is a tremendous big country we're living in, and it takes a good many hundreds of thousands of motor trucks to move the things that have to be transported even in dull times.

People are still eating—and the packing houses have recently made some purchases of new trucks to replace the ones that have been worn out during the past two years, and have placed inquiries for more.

Road construction for 1922 will call for the expenditure of millions of dollars, and already dealers are feeling the demand for motor trucks of the heavier type to be used in hauling road material.

Building construction promises to have the biggest year it has had since the war, for labor is plentiful, wage disputes have been pretty thoroughly settled in some places and are on the way to settlement in others. A recent conference of building, loan and savings bankers in Ohio declared



"All Ready to Put Her Into High"

that 40,000 new homes will be built in that state alone in the next six months, and other states are ready to make up for the housing shortage of the past few years by building thousands of homes. And all this means transportation of material by motor trucks.

Secretary Hoover says that the railroads of the country have pretty thoroughly depleted their inventories left over from government control, and are now in the market for increasingly heavy equipment orders. President McCrea, president of the Pennsylvania system, in a recent address in Pittsburgh outlined the expenditure of one hundred millions in the betterment of that road's facilities, and other railroads all over the country are planning big expenditures in bringing their neglected properties back into normal shape.

All this will be felt in every avenue of trade, and will mean motor truck utilization all along the line.

Even Roger Babson, who is known as a pessimist when it comes to business predictions, says that the country is on the upward grade as far as business is concerned and that consistent improvement may be expected during the remainder of the year.

B. C. Forbes, one of the ablest business writers in America, says: "The commodity most needed today is faith, faith that present difficulties will be overcome, that overhanging clouds will pass, that the dulness of today will give place to somewhat greater activity in a tomorrow not far off."

"Despite everything, I believe that there is justification for calculating upon the incipient revival of real improvement this Spring."

Mr. Forbes says that the "urge to find employment for idle capital is becoming tremendously strong." In other words, money at rest is of no use, and the people

who have it will begin doing things with it that will set the wheels to revolving again.

The Federal reserve banks, required by law to have a 20 per cent reserve fund now have an 80 per cent reserve, a ridiculously large amount of idle capital that must be employed if it is to be of use.

People responsible for earning money with capital will soon find ways to put it into circulation, thinks Mr. Forbes, and this will stimulate business wonderfully.

All in all, the outlook for the motor truck dealer of 1922 is the best he has had for several years, and the dealer who has faith in the business, who has courage to carry him through the present, and who will work intelligently ten hours a day selling motor trucks, is bound to win the financial rewards that come to him who fights hard, no matter what line he may be engaged in.

## Why Not a Third Tire Classification?

By H. W. SLAUSON, M. E., Engineering Service Manager Kelly-Springfield Tire Company

WHEN the Bureau of Public Roads of the U. S. Department of Agriculture conducted its tests on the comparative impact or road destructiveness created by various types of tires, a basis was created for establishing state legislative restrictions on truck sizes, speeds and loads, in accordance with the tire equipment employed. But because these tests showed the marked difference between the road destructive effect of solid and pneumatic tires, many state laws now differentiate only between these two types.

The proposed Uniform Motor Vehicle Law takes into consideration only two types of truck tires—the pneumatic and the solid. Definitions of these tires are to the effect that a pneumatic tire is one dependent upon confined air, and that a solid tire is one not dependent upon confined air for the support of its load.

These state laws, therefore, entirely ignore one of the most important classifications of truck tires which, for want of a better name, is known as the cushion tire. Theoretically, a cushion tire is not dependent upon confined air for the support of its load, but which possesses resiliency far in excess of that of the ordinary solid tire because of the use of properly placed displacement spaces into which the rubber (which is not compressible) may flow when subjected to pressure.

The tests conducted by the Bureau of Public Roads indicate that a properly designed cushion tire possesses a shock absorbing ability more nearly approaching that of the pneumatic than that of the solid. A peculiarity of such a cushion tire is that the impact or hammer blow imparted by it to rough roads does not increase in proportion to increased speed as is the case with the solid. In fact,

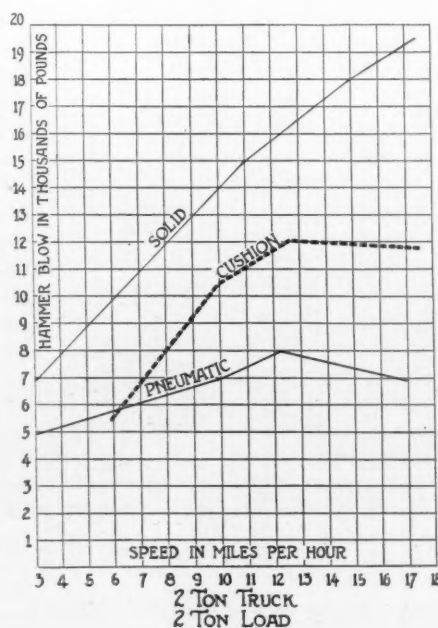
some tests indicate that the actual impact of a certain cushion tire is less at higher speeds than at lower speeds, and that such tires can therefore actually be run at eighteen miles an hour with less road destructiveness than at fourteen or fifteen.

The accompanying chart indicates the comparative road destructiveness of solid, cushion and pneumatic tires employed on a fully loaded two-ton truck. It is this middle line, representing the field in which truck tire development has been greatest and in which the largest opportunities for usefulness lie, that has been ignored by the legislatures of many of our states in the provisions of the Motor Vehicle Law. Such laws state, in effect, that this cushion type of tire shall be

classified as a solid and trucks using it shall be restricted in their activities as though they were equipped with solids.

It must be remembered, however, that these tests of the comparative road destructive effect of pneumatic, cushion and solids apply only to a hard-surfaced road which has already begun to deteriorate through the appearance of obstructions and depressions at least two inches in height. The road impact or hammer blow struck by a truck wheel when traveling over a smooth road is negligible whether the wheel be equipped with pneumatics or solids. Is it not unjust, therefore, on the part of certain State Legislatures to penalize the use on trucks of the one type of tire which seems destined to replace the pneumatic tire for equipment on vehicles of two tons capacity and over.

Another feature of road destructiveness which has not been taken into consideration is the damage created in wet weather by chains which must be used on solid tires or on smooth-tread pneumatics. Many a cushion tire, by every virtue of the arrangement of its displacement space, possesses a remarkable non-skid ability which obviates the necessity for the use of chains except in the most unusual conditions of winter operation. On the basis of a year's operation, therefore, such tires would present considerable less road destructiveness than might others which, although possibly more resilient on a rough road so far as impact is concerned, nevertheless, would require the use of chains more frequently than the other tire.

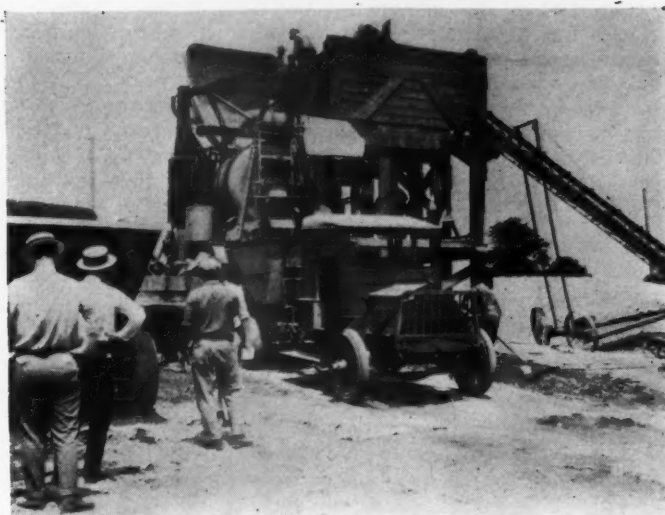


Service Number—April



# The Place of Motor Trucks in Highway Construction

About  
Three-Quarters of  
a Billion Dollars  
Are Available  
for  
Highway  
Construction and  
Maintenance



Road  
Contractors Are  
Big Buyers  
of Motor Trucks  
and  
Special Highway  
Building  
Equipment

By H. COLIN CAMPBELL

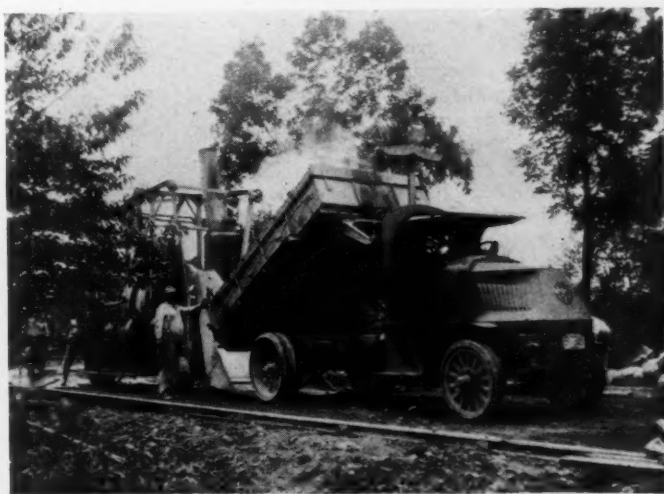
**A**LTHOUGH 1921 broke all records so far as road construction is concerned, all indications point to an even greater highway building program for 1922. Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, estimates that approximately \$720,000,000 is available for highway construction and maintenance during this year. And from the speed with which left-over funds of 1920 were used up during 1921, there is little doubt but that a very large proportion of the funds at present available will be spent during the current year.

A very large portion of funds spent in 1921 were devoted to the so-called permanent types of construction. More than 6,000 miles of concrete pavement, based on an average width of 18 feet, were included in last year's accomplishments.

When one remembers that no matter what the type of construction, transportation of materials is always an important feature of highway building, it is evident that the highway construction field represents one of the most inviting markets for motor trucks. Also requirements of transportation vary to such a degree that no one type of truck nor truck equipment seems likely to secure a monopoly. Take, for example, the problem a contractor has in operating a central proportioning plant on a concrete highway job. The preparation of the subgrade is an important feature of construction work, and over this subgrade all materials going into the highway must be hauled. They are carefully proportioned at the central plant, dumped into motor trucks, with specially built bodies, and transported to the big mixer located on the job. It is of extreme importance

that the subgrade be kept in good condition. It must not be torn to pieces by trucks hauling stone, sand and cement. Consequently, most contractors favor a lighter type of truck of 1 or 2-ton capacity, operating on pneumatic tires. Efficient dump bodies are necessary—bodies that will deposit the material quickly so that the truck can be on its way for a new load with least loss of time. In this connection there is a demand for portable turntables that will enable the truck to get away quickly from the mixer and permit following ones to come in and unload.

In Iowa, Minnesota and Illinois central mixing plants have also been used with great success. Here again the motor truck is called into service to transport the ready mixed concrete. Efficient operation is an absolute necessity under this method of work because loss of time



All Capacities of Heavy-Duty Trucks Are Used for Delivering the Dry Materials to the Concrete Mixers

means loss of material. The concrete must be deposited while in the proper condition or its full ultimate strength will not be attained. Of course, industrial railway equipment is used on many large jobs, but even in such cases the motor truck finds work to do. Also many jobs are not large enough to warrant the operation of industrial railway equipment.

Frequently the bulk of road building materials such as sand and stone are found within a comparatively short distance of the job in question and the contractor must arrange for the transport of these materials from quarry or gravel bank to the subgrade. There must be no let up in the transportation system for loss of time in delivering material means a loss of time for the whole mixing crew.

#### Highway Builders Fully Sold on Motor Trucks

Contractors are eternally on the lookout for improved dump bodies and efficient trailers that will supplement and increase the effectiveness of their transportation. Practically all construction work calls for heavy-duty trucks, and service features are always of interest to the road builder. It is estimated that last year 7,000 contractors had \$65,000,000 invested in machinery used in road construction. Over 1,000 firms were engaged in the business of manufacturing equipment used in highway building. Considering the fact that highway construction is still in its infancy, it is evident that the possible markets for motor trucks in road construction are far from their limit of expansion.

The superiority of motor trucks over other methods of transportation has long been established in the minds of highway contractors. It is no longer a question of whether to use a motor truck or a team of mules, but a question of what type of body, or make of truck, or size of vehicle is most suitable for a particular job. Any road builder who has used horses or mules and then put a motor truck on the job can tell you how he cut operating expenses all the way from 10 per cent to one-half by using the truck. There is no longer any hesitation about truck usage. It is firmly established, but contractors are becoming more and more aware of the possibilities of the motor truck; and are looking for the particular kind that will best suit their needs. At the Good Roads Show in Chicago in January, there was an excellent exhibit of the various trucks and truck bodies, and the thousands of highway officials attending the show from all parts of the country, showed a decided interest in this section. How to get material hauled quickly and cheaply was their big question, and it was to the pneumatic-tired, lighter trucks that they gave most attention.

#### Truck Must Do All Kinds of Work

The variety of uses to which the motor truck is put in the highway construction

field is well illustrated by a report from a New Hampshire county where a 3½-ton truck was part of the road building equipment. This truck carries a load of crushed rock and hooks on to a Burch spreader, dumping and spreading at the same time. Then it is hitched to an ordinary plow, and plows where such work is needed. When a big rock is encountered a chain is attached to the truck and it pulls the rock out. It is also used to transport materials to the construction job, and in various other ways when occasion arises. The heavy duty to which trucks are put at times is shown by the report of a road job in Pulaski County, Indiana, where 85 tons of stone were unloaded from a railroad car and spread on the roads in a single day by a 2-ton truck. A driver and three shovelers were the only laborers used in the entire operation. The truck is doing work that formerly required five teams.

However, on the big concrete highway construction jobs the trucks are operated on the "fleet" idea and contractors are in the habit of thinking in numbers rather

expensive in first cost and tires cost more.

The Ford truck most frequently hauls a four-sack batch of mixed concrete or dry ingredients, mix 1:2:3 to 1:2:4, weighing 2,500 to 3,000 pounds. Speeding over an uneven road and improper handling by inexperienced drivers, combined with this overloading are probably the factors that are responsible for the high maintenance cost often reported on this type of equipment. Occasionally flat dump bodies with one or two compartments are used instead of the V-shaped, Lee type body.

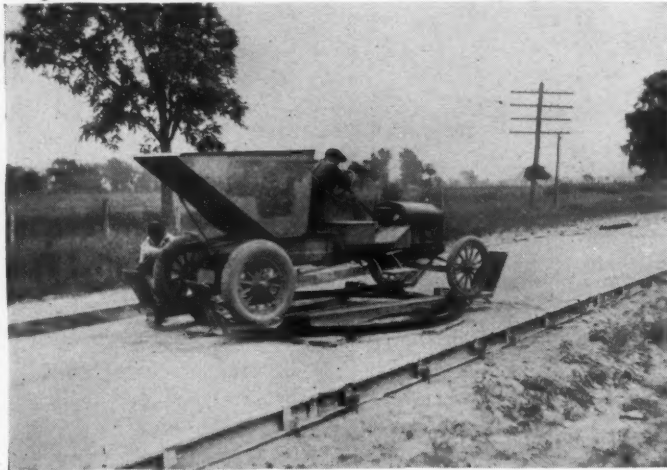
With the 2 or 2½-ton truck, two four-sack batches of mixed concrete or dry materials are usually hauled. In the former case, a two-yard Lee dump body is often used, and in the latter, two one-yard bodies of the same type are frequently employed. The load will vary from 2½ to 3 tons, but the trucks are usually sturdier in proportion than are the one-ton machines, so that some overloading does not seem to be so harmful. Pneumatic tires are almost a necessity for this kind of work with this size truck. A short wheelbase is desirable, in order to facilitate turning the trucks on the sub-grade.

Where hauling can be done over good roads, heavier trucks on solid rubber tires—3½, 4 and 5-ton capacities—have been used frequently. These are usually equipped with mechanical hoists. If mixed concrete is being hauled, steel dump bodies are used; if dry batches are being hauled, either batch boxes set on a wooden platform placed on the truck or steel plates dividing the dump body into sections are employed. In the former case, means must be provided to transfer the batch boxes at the mixer—often a small derrick attached to the mixer is used. In all cases where trucks are supplying the mixer direct, continuity of operation is essential.

In case materials are being stored on the subgrade ahead of the mixer, 2½ to 5-ton trucks are ordinarily employed for hauling in the materials, and the larger sizes are the more common. This is doubtless because the 3½ or 5-ton truck is more apt to be economical for the contractor's other work, and because the economy of transportation in large loads can be secured, since in times of bad road conditions, when the heavy trucks would tear up the highway, hauling can be discontinued temporarily.

#### Whole Country Interested in Road Building

Road building activities in 1922 will not be confined to any one section of the country. Starting in the New England states a definite program has been mapped out for the improvement of thousands of miles of highway this year. New York state built 530 miles of concrete road last year and plans for similar activities this year. Pennsylvania constructed 612 miles of concrete last year and although the state's noted highway chief, Lewis Sadler, died a short time ago, the program



The Portable Turntable is a Big Asset in Road Building

than of single trucks. Their equipment contains a number of trucks, and all the different auxiliaries that the peculiar nature of their work requires. The size of the nation's road building job has attracted engineers and constructors of high caliber and efficiency is always demanded by men of this class.

#### Types of Trucks and Truck Equipment

One-ton Ford trucks on pneumatic tires with Lee dump bodies were widely used in road construction in 1920 and 1921, usually in hauling proportioned dry batches from the central loading plant to the mixer or in hauling mixed concrete from the mixer at the central plant to the subgrade. The first extensive use of this type of truck was in 1919.

Contractors last year seemed to be favoring the use of somewhat heavier trucks—the 2, 2½ or 3-ton sizes. When mounted on pneumatic tires, the 2 or 2½ ton truck can make as good speed as the one-ton job, does not cut up the subgrade much more, is more economical in gasoline consumption, is more dependable, requires only half as many drivers, and needs less frequent repairs. It is more



laid out by him will be followed by the present officials and another large mileage of concrete will undoubtedly be constructed this year. Maryland has long been known as a state of excellent highways and the idea of widening old roads with a four-foot shoulder of concrete has been successfully introduced. North Carolina, under a bond issue of \$50,000,000 authorized in 1921, has an excellent highway organization and will carry out a big program this year. West Virginia is building roads from a bond issue of \$50,000,000 authorized in 1919, while Ohio and Indiana are maintaining a steady rate of progress that was started years ago.

Michigan authorized a bond issue of \$50,000,000 back in 1919 and expects to construct many miles of durable roads during the coming season. Wayne County, Michigan, has over 225 miles of concrete roads within its boundaries. Illinois built 400 miles of concrete highways last year and expects to spend approximately \$35,000,000 during 1922 on her roads. Wisconsin constructed 340 miles of concrete roads in 1921 and plans to build 426 miles during the present year. Georgia is talking about a bond issue for \$75,000,000 for good roads and prominent people in all parts of the state



**County Road Commissions Are Rapidly Coming to the Use of Motor Trucks for Hauling Road Scrapers Because of the Power They Have and Also of Their Double Use as Haulers of Material and Power Plants. The Above is a Heavy-Duty GMC in Road Work at Leesburg, Ind.**

are giving the movement their hearty support. Alabama voted a bond issue of \$25,000,000 in January for good roads, while in the state of Florida a contract was only recently awarded for a stretch of 42 miles of concrete leading into Jacksonville. In all sections of the country preparations are being made for excep-

tional activities in highway construction this year. Thousands of dollars will be expended for road building equipment, for the success of road construction largely depends on the efficiency of the machinery. The highway field is a most excellent one to which the truck dealer should turn his attention.

## Concrete Road Pays Truck Dealer Big Dividends

The state of Illinois completed a fine new concrete road across the lower part of the state from St. Louis eastward last summer, and immediately St. Louis motor truck dealers began to sell more motor trucks.

**One dealer has sold over \$20,000 worth of motor trucks to ONE man since August 1st last, just because of this road!**

Yet motor truck dealers are notoriously laggard when it comes to really putting forth time and effort in the promotion of hard surfaced roads.

The refrigerated meat delivery truck shown herewith is the last of the \$20,000 worth of G. M. C. heavy trucks sold by Manager Charles E. Paggett of the St.

Louis branch to John Schlaefer, 517 Clark avenue, for service in and out of St. Louis on the new concrete highway.

"Why," said Mr. Paggett to the writer, "we could well afford to have made a \$5,000 donation toward the construction of that highway, and still be money in pocket because of it."

For these trucks are not the only ones that the GMC branch has sold because there is at last a real highway eastward out of St. Louis, tapping one of the richest farming sections in the country.

This refrigerator truck has the latest type of cold storage body mounted on its 5-ton chassis, and it will leave St. Louis every day filled with meat from the St. Louis packing houses for all stops between the Mississippi and Greenville, Ill., a distance of about fifty miles. At cur-

rent rates it can deliver fresh meat along this route much cheaper than it can be handled by the railroads, and the packing house interests at St. Louis have welcomed the establishment of this delivery.

For a return load into St. Louis, the truck will carry milk from the farmers along the way, thus getting the necessary two-way haul that makes this type of transportation pay out.

Present express rates on meat to local points east of St. Louis are 55 cents per cwt., and the new refrigerator truck will deliver it direct from the packer to the butcher shop in each town at 50 cents per cwt. Not only will it be cheaper delivery, it will be better delivery too, for the motto of the new service is "Today's meat today—on ice all the way."

Eventually the route will be lengthened to Vandalia, and other delivery routes of like nature will be established.

No better argument could be put forth as to the cash-in-hand value of concrete highways to the truck dealer than the results shown since the completion of this Illinois road.

Motor truck dealers are overlooking one of their very best business builders if they fail to work their utmost toward the building of hard surfaced roads in their communities.

The writer recently road across Illinois on the Pennsylvania railroad, which parallels this new concrete highway most of the way, and saw many loads of cordwood, milk, baled hay, corn, and other farm products being hauled to market by horses. There is a fertile field there for the motor truck salesman, for those farmers will not long be content with slow horse haulage when they have daily before them the example of the speedy motor truck on its way to and from the big cities.



**Special Refrigerator Body on 5-ton GMC Chassis.**

## Why This Contractor is Making Heavy-Duty Trucks Pay

Every Truck is Continuously on the Job. The Driver is Considered a Big Factor by This Contractor in Making for Low Maintenance Costs

By JAMES W. COTTRELL

**D**O you want large concerns using heavy duty trucks with success in their businesses or do you want hauling contractors who have made their living by using large trucks?"

The question was asked by a factory branch official whom I had asked for names of several users of heavy duty trucks.

"Hauling contractors who have made their living by using heavy duty trucks." The question itself gave an idea for the answer. Surely, men who are making hauling their business are best able to give information about the value of heavy duty trucks.

A large concern may be using trucks to do its own hauling. The cost of the hauling is a necessary business expense, and is charged up as such. Whether the trucks, considered by themselves, really "pay" or not may not be a vital matter to the business as a whole.

But the man doing hauling as a business must make it pay or quit.

F. Denny Curry, of 1 S. Marshall St., Philadelphia, is a hauling contractor who has been, and is, carrying on his business successfully. And the use of heavy duty trucks is a necessary part of the business at this time.

The business was started 48 years ago by John Curry, and has been carried on ever since that time. And the headquarters of the business have been located within one block all of that time.

Horses were used at first and still are used. At present John Curry owns the horses and F. Denny Curry owns the trucks. The latter has been actively interested in the business for the past thirty-one years.

The equipment now in use includes eight double teams, five single teams, and six trucks—one Pierce-Arrow 5-ton, one Packard 6½-ton, two smaller Packards, a Stewart and an Autocar.

The business is, strictly local or city, hauling of freight. No dump body trucks are used. Horses are used only for very short hauls and the trucks are used for the longer hauls in the city.

The Curry office is small, in fact tiny. It has somewhat the appearance of a wooden bay window on a brick building on Marshall Street. But in the small space all needed office equipment is compactly arranged. A desk, two chairs, letter and card files and phone take care of the office work. And the location is a very good one for directing a trucking business. Close to Market Street between Sixth and Seventh Streets, the office is within a stone's throw of the wholesale paper district, within a few blocks of four newspapers and one magazine publisher, and only seven blocks from the Delaware River piers.

Not chance, but the giving of good service and keeping constantly after business is the reason for the good trade and large number of customers of this business. A large percentage of the work is that of unloading and carting of car load lots. Out of town shippers are reminded, at intervals, that Mr. Curry is ready to take care of their deliveries in Philadelphia and, if no shipment is received from a certain customer for a long time a letter is sent asking why. Individual letters of this kind are a very effective way of keeping the hauling service offered before the minds of customers.

The largest single contract is that of hauling newspaper in rolls for the Public

Ledger Company. The paper is hauled from a warehouse at Walnut Street and Delaware Ave. to the Public Ledger plant at Sixth and Sansom Streets, about one mile. The five-ton Pierce-Arrow and the 6½-ton Packard are used on this job and they work at it six days a week, week in and week out. The rolls weigh from 900 to 1600 pounds apiece and loads are made up of about rated capacity.

Each truck makes from eight to nine trips a day. At the warehouse the rolls are put on the truck by four men using also an electric hoist and are rolled off by the driver alone in unloading.

### Two Trucks Haul Million Pounds of Paper a Week

These two trucks on this one job haul a million pounds a week, and over. A startling statement, indeed! But figure rated capacity of the two trucks, 11½ tons, eight loads a day, for six days in a week and the sum is well over 1,000,000 pounds.

A letter from the Ledger Company gave the figures on the shipments received for one week. This particular lot was received by boat and was hauled from two piers instead of from the warehouse. One of the piers, Pier C, is at the northern end of the city and the other, Pier No. 98, is at the southern end of the city. 830,406 pounds were hauled from the first pier end 122,142 from the second, a total of 952,548 pounds. Because the hauls from the piers were longer than the usual one from the warehouse, two extra trucks were put on the job. The rolls of paper must, of course, be delivered right on time.

### Dealers Handle the Service on These Trucks

One of the two regular trucks hauling paper was operated for one year at a cost for parts of only 56c, according to the figures given by Mr. Curry. This record was remarkable and we asked if there was any particular explanation for it. Mr. Curry replied that it was very largely due to the skill and carefulness of the driver. Another driver had the truck for awhile and the truck was laid up very often for repairs. Then the present driver, Jack Pollit, took the truck and made the record for a year's operation.

All of the trucks are kept in a garage and one mechanic hired to take care of them. Most of the minor repairs and adjustments are made by the drivers. For overhauls the trucks are sent to the service stations of the dealers who sold them when new.



One of Curry's Trucks With a Typical Load



### Good Drivers Mean Low Maintenance Costs

To show the importance of the driver in economy of operation, Mr. Curry told of one accident caused by one of his trucks running into another which had stopped suddenly ahead of it. The regular driver was sick and the substitute driver was in a hurry and did not allow himself room enough to stop. The collision resulted in a repair bill of \$358.

Mr. Curry believes that good drivers are absolutely essential for success with trucks. He employs good men only and he pays them good wages. They are paid \$35 per week plus \$6 for driving on Saturday night.

Five trucks are used on Saturday night to haul the Sunday edition of the Public Ledger to the various freight stations in the city. The Ledger Company uses a large fleet of trucks to distribute papers locally, but turn over to Mr. Curry the shipments by freight and express of the large Sunday issue.

One truck, the Stewart, is rented to the Quaker City Paper Company. The truck with driver is supplied to the company for a rental figured on a weekly basis. This truck has been in use since June, 1921, without any expense for repair parts except those from accidents. This truck had three accidents in one month. Which is just another illustration of the difficulty of accurately estimating the cost of operation of a truck, especially for short periods.

The length of time that the Curry business has existed and grown is evidence that it is well managed and profitable.

Mr. Curry stated that there has been a marked reduction in the prices for hauling during the past year. All established hauling contractors have reduced prices. But the greatest trouble came from individuals who had, with insufficient capital, bought trucks on time. In order to get money to meet their notes some of these men cut prices to get business.

They are often operating below cost, taking into consideration all items, operation, repairs, and depreciation. But they are interested in ready money, not ultimate profits. And the cutting of prices by a few, raises the suspicion in the minds of customers that the prices of all have been too high.

The life of a truck is estimated, by Mr. Curry, at 100,000 miles. Operating expenses exceed greatly the first cost of the truck. In fact, Mr. Curry figures that the cost of tires on a five-ton truck used for 100,000 miles will cost more than the chassis itself. This estimate is based on a cost of about \$4400 for the chassis and a set of tires cost \$450, lasting for 10,000 miles.

There will be a lot of trucks sold in 1922; very few bought (like in 1918 and 1919). Selling heavy duty trucks is not the easiest thing in the world. Shrewd buying, keen competition and many other factors make it no proposition for half hearted measures.

Parts stock, service station equipment, and a chassis or two on the sales floor take an amount of capital that cannot be left idle.



Picturization of "Excavation Service in Chicago," Showing the Method Devised for Transferring a Slow-Moving, Heavy-Duty Steam Shovel and Equipment From One Operation to Another. The Truck Used in This Particular Instance is a Winther Heavy-Duty Model.



Showing the Model 5-K Standard Dump Job Equipped With a Vertical Hoist, Recommended by the Standard Motor Truck Company, Detroit, Mich., as Peculiarly Adapted to Excavation and Road Work. Besides Having a Road Speed of 15 M.P.H. it Has Ample Power, as May be Observed From the Illustration, for Pulling Capacity Loads Up the Unusual Grades Encountered in Excavation Work.



Nothing is Impossible, No Matter How Formidable a Task, Until It Has Been Tried With this principle in mind the redoubtable John Kessler, of Tipton, Ind., whose daily occupation is solving similar problems of heavy machinery removal, tackled the above job and successfully carried this immense boiler to its new quarters. The truck is a heavy-duty Indiana, made by the Indiana Truck Corp., Marion, Ind.

# Will Legislators Define the Tail Light?

By C. P. SHATTUCK

**A**CCORDING to reliable sources of information Massachusetts will enact some law during the present legislative session that will clearly describe the function and definition of a tail light. Perhaps by the time this article appears, power will have been conferred upon the registrar of motor vehicles of that state to define what a tail light is and how it shall illuminate the rear number or license plate.

The same sources of information declare that if the bill is passed that other states will enact similar legislation for many states, particularly in the East, closely follow the motor vehicle laws of Massachusetts. If such be the case, it is reasonable to assume that before the various legislatures have adjourned that laws will be passed changing those now regulating the character and use of the tail light. And it may be expected that those states which do not pass new laws may follow Massachusetts's proposed example and enforce the laws now existent. This means that thousands of trucks will be obliged to purchase new rear lighting equipment, repair the old, change the location of the present light or the relation of the light to the number plate.

## How States View Rear Plate Illumination

An analysis made by the writer of the laws of the various states, dealing with the tail light, its location, functioning, etc., shows the usual lack of uniformity and, in some states, that there are no laws clearly defining the tail light, etc. A summary of the laws dealing with this subject is appended herewith and it shows some interesting features. For example four states do not actually require a red light at the rear although the law mentions something about lights, but the meaning is not clear, at least, to the layman. One of these states says that "there must be two lights in front only."

Only 16 states clearly state the distance in feet the red light must be visible, the maximum being 500 feet and minimum 50. The balance merely require a red light. Nothing is clearly defined as to its visibility, etc. Twenty states require that the number plate at rear shall be visible at distances from 25 to 100 feet. Eight states have a law requiring that the plates, front and rear, be kept clean. Thirty so word their laws as to the legibility of the numerals, letters, etc., of the rear marker. Provision is made, of course, for foggy weather, etc., or abnormal conditions.

## Some of the Laws Interesting

As an example of lack of clarity, take the Florida tail light law. It says that the rear marker "shall catch the side rays of the tail light," which could be interpreted by those so inclined to mean that the marker could be located at such an angle as to make reading of the numerals

exceedingly difficult under normal conditions and yet comply with the law.

That section from the Massachusetts law reads: "Rear light shall be so placed to show red light from behind and a white light so arranged as to illuminate and not obscure rear register number." Nothing is said as to the distance numerals must be visible under normal conditions, and it is believed that the proposed legislation will clearly define the distance.

## The Uniform Vehicle Law

The uniform vehicle law, as endorsed by the Motor Vehicle Conference Committee of the various automotive associations, is quoted because of its clarity, also because some states have adapted it to their laws:

**"Rear Lamps**—Every motor vehicle, tractor, trailer or semi-trailer when on the highways of this State at night shall have on the rear thereof and to the left of the axis thereof, one lamp capable of displaying a red light visible for a distance of at least 100 feet behind such vehicle, provided that when a vehicle is used in conjunction with another vehicle or vehicles only the last of such vehicles shall be required to carry such a lamp. Every motor vehicle, tractor, trailer or semi-trailer when on the highways of this State at night shall carry a lamp illuminating with white light the registration plate of such vehicle so that the characters thereon shall be visible for a distance of at least 50 feet."

State.	Distance Feet Red	Distance Feet	Plates Clean	Plates Numerals Legible
Arizona	...	50	...	yes
Arkansas	...	...	...	...
California	500	50	yes	yes
Colorado	...	...	...	yes
Connecticut	50	50	yes	yes
Delaware	...	25	...	...
Florida	...	...	...	...
Georgia	...	...	...	yes
Idaho	100	...	yes	yes
Illinois	...	50	...	yes
Indiana	...	...	yes	...
Iowa	50	...	...	...
Kansas	...	50	yes	yes
Kentucky	200	...	...	...
Louisiana	...	...	...	...
Maine	100	50	yes	yes
Maryland	...	25	yes	yes
Massachusetts*	...	...	...	yes
Michigan	100	100	...	yes
Minnesota	...	...	...	yes
Mississippi	...	60	...	yes
Missouri	...	25	...	yes
Montana	...	100	...	yes
Nebraska	...	...	...	yes
Nevada	...	...	...	...
New Hampshire	100	50	...	yes
New Jersey	...	50	...	yes
New Mexico	500	...	...	...
New York	5	50	...	yes
North Carolina	...	...	...	...
North Dakota	...	...	...	...
Ohio	...	200	...	yes
Oklahoma†	...	...	...	...
Oregon	100	50	...	yes
Pennsylvania	...	...	...	yes
Rhode Island	60	60	...	yes
South Carolina†	...	...	...	...
South Dakota	...	...	...	yes
Texas	500	...	yes	...
Utah	100	100	...	yes
Vermont	...	50	...	yes
Virginia	...	...	...	yes
Washington	200	60	...	yes
West Virginia	100	50	...	yes
Wisconsin	...	...	...	...
Wyoming	50	...	...	...

\* New bill proposed.

† No law.

Twelve states have adopted the 50-foot illumination feature of this law, but one state defines the distance at 200 feet, and three set the distance at 100 feet, which brings up the interesting question what lighting equipment will clearly reveal the characters of the marker at 100 feet, or 200 for that matter, particularly when the vehicle is traveling at the average limit of legal speed or approximately 25 miles the hour?

## What is the Proper Equipment?

The question as to the efficiency of the lighting equipment, which is employed in three different forms today on motor trucks, namely, oil, acetylene gas and electricity, is one to be determined by tests, practical and otherwise. By efficiency is meant the ability of the light to meet the requirements above mentioned. And the

Any proposed legislation, or enforcement of that now existing, must be of interest to the industry. The truck manufacturer does and may equip his chassis with a suitable tail light, but unfortunately neither he nor the dealer can control the buyer mounting a body which, because of a long overhang, for instance, will so obscure the light that the license plate is not readily discernable. Even a perfectly good oil tail light, if the lenses are smoked, broken, etc., or oil supply not renewed, will fail to meet requirements. Similarly, if the red lens of the electric light is damaged, and not replaced, the law in some states is violated.

If Massachusetts enacts a law requiring the white rays of the tail light to so illuminate the characters of the rear marker, and to be legible, easily read, etc., at 75 feet, for example, and other states follow suit, much of the present lighting equipment on trucks today will either have to be renovated or replaced with new. It is a matter of fact that thousands of trucks are being operated at night with no rear light other than an ordinary hand oil lantern which does not meet the purpose of the law. Some trucks are seen using a same type of lantern for a front light. Our rural cousins are, perhaps, the worst offenders in this respect.

## "An Ill Wind," Etc.

There is every reason to believe that greater activity will be displayed by the state officials in enforcing lighting laws during the coming summer and this should mean that the dealer will be afforded an opportunity to merchandise lighting equipment and to replace damaged components of present systems.

It might be that it would be more satisfactory for all concerned, if a uniform tail light law along the lines of that endorsed by the Motor Vehicle Conference Committee were adopted and enforced, rather than the enactment of a number of new laws.



# Are You Maintaining Owner Contact?

## Are You Doing Anything to Keep the Owner Sold on *Your* Product and *Your* Establishment?

By JAMES J. FITZROY

**H**OW many of your salesmen, Mr. Dealer, build and maintain contact with the business men whom they have sold a truck?

What are the advantages of keeping in touch with the buyer after the sale?

To what extent is the salesman warranted in so doing, and how much of his time should be employed in establishing and maintaining the contact?

Has it any value in merchandising motor highway transportation?

The first question was suggested to the writer by a business man who purchased a 2-ton truck with a standard body some four months ago. He was sold along conventional lines. In discussing his investment from a utility and economy standpoint, he said, "The singular feature about the truck business is that the salesman sticks to you like a burr until he gets the order, but after that," and his expression indicated the zero hour. "In my line I purchase many articles," he continued, "and the salesmen follow-up. Why, some of the houses I do business with have a policy of checking up to see if their goods are giving satisfaction. They co-operate with the sales helps, suggestions for window displays, advertising, etc. The point I am trying to bring out is that these houses make a real effort to keep me sold on their line, to create confidence in their product and thereby build good will. But it is so different in your truck business. After they get the contract, and the money, the salesmen and dealer forgets you, no—not quite, for the latter remembers you with repair bills. Now is my case an exception? Do all dealers work on this basis or do they do as other lines do, keep the customer satisfied with the product?"

### What is Due Buyer After Sale?

The writer hastened to the defense of the dealers, but after hearing the same

story from a number of truck owners, and after talking with salesmen, it appears that contact with the buyer is not maintained as it should be or, rather, it is **not properly developed.**

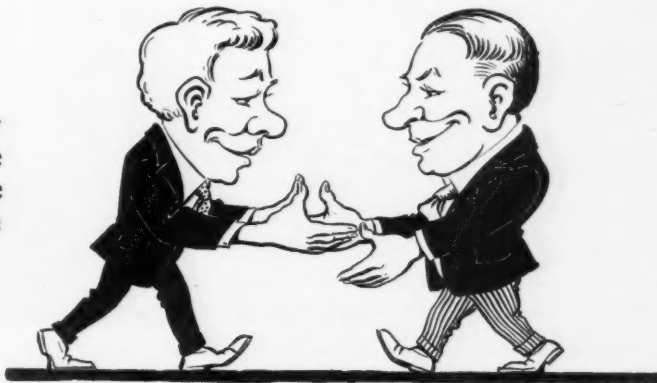
There is a well known passenger car maker whose billboard advertising asks the question, "What Comes After the Purchase Price?" It may be interpreted to mean maintenance and operating costs, service if you please, but is it not logical to assume that there is a broader meaning, one in which contact figures?

And after all what is contact? In merchandising it may be interpreted as the

The prestige of a concern is built on the foundation of quality, but a quality article can be misused and condemned. Unless the owner can be shown how to obtain proper results with his purchase, he will not be a good advertiser for it. But if the merchant selling the article maintains contact with the buyer it is logical to reason that condemnation can be converted into recommendation.

Suppose the truck owner quoted early in this article was not obtaining the efficiency expected from his purchase, and discovered through costs that his delivery expenses, package or ton mile, were

Is the Owner  
Glad to See  
You Anytime  
After the Sale  
or—



establishment of friendly relations with the buyer, the execution of the obligation of the seller—keeping the customer satisfied. We hear much of the value attached to the friendship advertising done by the satisfied buyer. If it were possible to reckon this asset in terms of dollars and cents it would represent a vast sum. On the other hand, the owner of a product which is not giving satisfaction, even though the owner does not properly use it, will not help to build good will advertising. On the contrary—it's the reverse.

greatly in excess of those stated by the salesmen. Let it be further assumed that it would be practical for this concern to use two or three additional trucks if a proper analysis were to be made of the haulage conditions. Now, if the owner was one of the dissatisfied type, even through no fault of his, is it not reasonable to argue that when any salesman called to sell other trucks he would encounter a stone wall of resistance? And how much effort, time and money would have to be spent in convincing the prospect that he could use trucks to an advantage? And is it not logical to assume that a salesman of another company would "knock" the other truck and the other salesman? And do such selling methods tend to build confidence in the truck industry?

The truck owner referred to in opening paragraph was correct when he stated that the truck industry differs from all others, for the efforts of the manufacturer, dealer and salesman seem to be concentrated wholly on sales and without proper regard to the future market.

If a manufacturer of a standard commodity, which had repeat potentialities,



Does He Feel  
That He Has  
Been Stung?

should be satisfied with building up a demand for his product through intensive advertising, publicity, demonstrations and sales effort would he be successful if he did not continue to advertise and sell? He would NOT.

Take for example the manufacturer of a breakfast cereal. Does the maker stop after it is introduced and sales are running good? No, he continues to advertise to keep contact with users through his sources of distribution. Advertising is necessary after the article is established. And there are many ways of advertising. The best is maintaining the contact with the user and cashing in on the prestige of the product. Sales effort links up with the advertising. Suppose the maker of the cereal sat back and waited for repeat orders, would he get them in the volume he requires to meet his overhead? He would not, because of competition.

#### The Bell Ringer Does Not Register

These are among some of the advantages of maintaining contact with the purchaser. To what extent is the truck dealer and salesman warranted in maintaining a contact with a buyer? It may be argued that the salesman has no time to call on his buyer, that he must concentrate his on "new sales." The dealer may also point out that his time should be devoted in campaigns for sales and steering the business ship. The writer does not suggest that the salesman make himself a nuisance to the buyer by repeated calling. A salesman would be a nuisance, a pest to the owner, if the former merely rung the door bell. But on the other hand, if the salesman was able to make suggestions to the owner which would increase the efficiency of the truck, reduce operating or maintenance costs, offer constructive criticisms, he would be welcomed by the busiest business man.

If I were a truck owner, I would welcome a salesman who would make periodic calls on me and ask me if I was satisfied with my buy, with the service.

etc. If I had a kick I would be glad to get it off my chest, and if I were to blame I would appreciate being shown where and why. If a salesman, or a dealer, is interested in my welfare, and my success with the truck, I would be interested in his truck and his organization. If the salesman could point out to me how I could reduce my transportation costs by changing loading or routing, by a different body or using certain equipment, I certainly would give him a hearing. I would feel, as did my friend, the truck owner, that the dealer had a greater interest in me than sales and if his policies were right I would have confidence in his product and organization.

Another advantage accruing to the dealer, in maintaining contact with the

buyer, would be ready access when the owner was in a position to need an additional truck or equipment or supplies. Don't you suppose that the business man will see the salesman he knows, who comes to him with some worth while idea or suggestion, and much oftener and quicker than the door bell ringer type of order takers? If the salesman keeps up the contact won't he be the first to learn of the need of a new truck? And won't the satisfied user be apt to give the salesman tips on other firms which might be in the market for trucks? There is no need of going into the advantages of the repeat orders for the salesman who does not build for them does not make any real money selling trucks.



#### Heavy-Duty Hauling Includes the Carrying of Anything Having Weight or Bulk, be It Manufactured or Building Materials

The above illustration shows the simple manner in which the product of the One-Minute-Manufacturing Company, Des Moines, Iowa, is delivered from its shipping department located on the second floor to the body of its three-ton International truck. The chute eliminates the need of an elevator and facilitates efficient and rapid loading.



It Goes Without Saying That the Service Required of These Trucks, a Stewart and Federal, or for That Matter Any Truck Operated in the Quarry Business, is Strictly Heavy-Duty and Most Strenuous. The Above Illustrations Convincingly Demonstrate That the Motor Truck Possesses the Stamina and Power Required for This Work. Stone Hauling, However, is Only One of Many Fields That the Enterprising Dealer Can Cultivate. A Little Territorial Research Will Reveal a Host of Opportunities in Other Similar Lines, Particularly in the Transport of Building Materials, Fuel, Heavy Machinery, Storage, Etc.

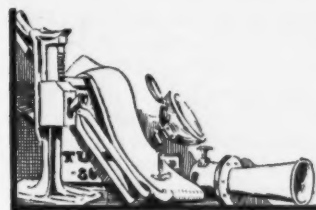


## How to Plan a

## Truck Equipment Sales Campaign



***The Dealer Who Says There is No Money in Selling Truck Equipment Has Probably Never Made a Systematic Attempt to Do So. Selling Equipment is No Longer a Picker's Game; It Means a Good Profit to the Wise Dealer.***



By C. S. PERRIE

**M**ARCH is the month during which the truck dealer, in the city, village or town, should formulate plans for his spring equipment and supplies campaign and map out merchandising methods. The COMMERCIAL CAR JOURNAL has always advocated the selling of equipment by dealers and a number of articles have been published on this subject from time to time, with the result that some truck dealers are giving the subject the attention it deserves.

#### Why Should the Dealer Sell Equipment and Supplies?

Here are a few concrete reasons. No. 1 is that the dealer will not sell as many trucks this year as he did during the boom times and, therefore, the gross and net profits will be less in proportion. While it is conceded that 1922 will see good business in motor highway transportation—the truck industry is optimistic—those with their ears to the ground admit that the dealers must mend their fences. They must exploit those lines which have been neglected, passed up, ignored if you please, or else suffer a loss in volume transacted.

If the dealer reasons along the lines prevailing during boom times and still argues that selling equipment and supplies is a picker's game, he will, eventually, find himself in the same boat with those manufacturers who let the bars down to the so-called pirate parts makers. In other words, there is a stable demand for equipment and standard supplies and the bulk of this market has been, and still is, being exploited by others than the dealer, although as previously stated, the live wire, progressive, visionary dealer is cashing in on this field.

Reason No. 2, which is somewhat analogous to the first, is the advantage of contact with the truck owner. (This subject is discussed elsewhere in this issue.—Ed. Note), which means more truck sales and profits from the sales of equipment and supplies.

Reason No. 3 is that if the campaign is properly planned and executed the dealers' organization can be held intact, and the overhead considerably reduced. Another reason is that selling will educate the salesmen on equipment and supplies and afford the commission type an opportunity to earn a little extra money.

#### Must Sell, Not Take Orders

Let us analyze the possibilities of merchandising the lines referred to and let's not overlook the importance of such a campaign and its relation to future truck sales. In the first place, every dealer, large, medium and small, is in the truck business to make money. Profit is the keynote in every line of endeavor, in the selling of any article whether it be a truck chassis, or a \$2 article that will either prolong the life of a component part, reduce operating or maintenance costs or contribute to the comfort and convenience of the driver. But no matter how good or practical the article—the dealer must properly develop the market and must sell, not take orders.

#### How to Analyze the Market

Proper analyzation of the market must be made if success and profits are expected. There are six factors to be considered in the campaign and these are as follows:

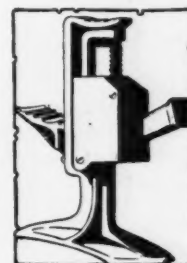
- 1—Trucks sold and in service
- 2—The prospect list
- 3—Choosing and stocking
- 4—Sales campaign
- 5—Advertising, sales letters
- 6—Window displays

No successful business man buys stock without estimating the market possibilities, and applying this rule to the equipment and supply campaign it is obvious that a very careful analysis should be made of the requirements of the trucks in service, the work they do and what they lack or need. In other words, the trucks sold should be inventoried. A simple and inexpensive form can be compiled somewhat along the lines shown on the following page.

Such a form filled out is self explanatory. It gives complete details. Next, how is this information to be compiled? Simple enough and not expensive. Supply forms to the service station with instructions to check the equipment.

The name, address, type of truck, body, etc., sold by, date, etc., can be easily supplied by the office, and it is suggested that carbon copies be made, one for the manager of the sales campaign and the other for those who are to obtain the information. Blank forms can be supplied the service station, but the carbon copies are

given to the salesmen and to the traveling inspectors. To avoid duplication of effort, other than in service station, list the trucks and distribute so many names according to territory and salesmen. The last named can check much of the data by using their eyes when



on the streets, and by talking to the drivers. Cultivating the driver will be found a valuable asset in the sales campaign.

#### Compiling Prospect List

The details of the inventories will be the basis of the prospect list and here is where the man in charge of the campaign must be careful to not overestimate his market.

Making up the order will require thought and vision. Because there are 400 trucks not equipped with say odometers, or speedometers, does not necessarily imply that the potentiality of the mileage and speed recording market is 400. Not by any means, for some of the 400 will have some strong reasons why they do not need them even if they do. The same will apply to the other articles. The equipment buyer must be guided by his knowledge of his prospects, of how the trucks are used and the advantages or benefits the buyer will derive from the purchase and installation of the device. It might be well, perhaps, for the buyer to enlist the articles and place them in order of practicability plus demand.

As it is very easy to overstock, caution should be exercised in making the analysis. The knowledge of the sales manager should be valuable in determining what per cent of the whole can be sold, and it is suggested that selling effort be not confined to your trucks, but applied to your



competitors, for he may prove one of the type not favoring the plan, so his customers are your prospects.

#### Offer a Prospect List Prize

The more prospects obtained the better the chances for big volume of sales and this is what is desired. Enlist the support of every member of the organization in the preparation of a prospect list of outsiders, other than your customers. Supply every member of the organization with a small note book and a pencil, asking that they keep their eyes and ears open, on the street and elsewhere. One of the best methods of securing prospects is to note a truck on the highways, taking name or license number, and noting the equipment which is missing. One of the most successful merchandisers of equipment the writer has known employs this method. It might be a good plan to offer prizes to the employees in this prospect hunt, giving first, second, third and fourth prizes so all will be encouraged to hustle. An award of some kind will stimulate activities and keep them interested in the campaign. For any sales campaign to be successful the dealer must sell his entire organization.

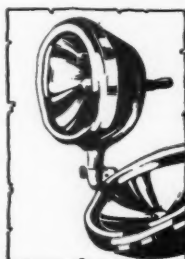
Whether the entire sales force or one or more men should be developed for this work is up to the dealer. The advantage of making a big campaign, one full of pep, is that it will follow up the impact made by the advertising sales letters and window displays. The psychology of selling is to strike when the iron is hot.

#### Advertising and Sales Helps

No sales campaign of this kind will be successful, or complete, without advertising, letters and service. Effort should be made to interest the manufacturer of the equipment to co-operate in advertis-

ing, even if only partly. In the event that the maker assists, the dealer should be allowed to inject the keynote of the campaign in the copy rather than a mess of glittering generalities about the product. The copy should, of course, be run in the local papers serving the territory of the dealers, and of his sub-dealers, for these should be included in the campaign. It looks much better to announce a list of places where the articles may be obtained than to advertise one.

In preparing copy make it snappy, punchy and incorporate the pocketbook appeal. It is about the only appeal that interests the buyer today. He is through with buying anything and everything. Today he must be shown. Avoid the "canned" type of copy. What sells is a plain, honest statement, not a lot of adjectives, etc. If you are selling tires, talk tires,



not about a tire that the Sultan of Zulu used. And the writer opines that the dealer can write some real copy if he puts his mind on it. Some of the best advertising copy he has seen, and which pulled the best, was prepared by the dealer. Too many pass this job to a clerk or to some outsider whose actual knowledge of the automotive industry is gleaned from hearsay knowledge, not actual experience. If the dealer cannot spread his sales talk in ink who can?

#### Sales Letters and Window Displays

The preparation of sales letters, follow-ups, should receive more than passing attention. It is an art to compile a snappy letter that will catch and hold the inter-

est of the prospect, for the truck owner is a busy man and it must be a good letter that will get to him. Perhaps the suggestion as to the pocketbook appeal can be made the second time.



Window displays and salesroom floor displays are factors which should be considered. By window display is not meant the throwing in of a mess of stuff, but rather the dressing of a window and so arranging it that one or more products stand out prominently.

ly and attract the eye. The arrangement of the article, or display, should be made from the practical viewpoint, i. e., showing the utility of the device, and why it saves time or money. Make up an attractive card with, say a dollar sign and a few words to indicate the saving. Do not place too much on the card, but enough to arouse the interest of the prospect. Let the salesman do the rest.

#### Link-up by Demonstrating

Whenever practical, link up the article with the demonstrating truck. For example; suppose a drive was being made on a rear signal stop device for the week or a few days, and copy had been run in the papers and the letters are out. Put a stop signal on the demonstrator, also a big, but neat sign, calling attention to the signal, what it means to the owner, etc.; also have the driver of the demonstrator flash the signal. It may attract some passenger car owners and this would be helpful if you also sold passenger cars. Another suggestion, based on what a dealer does, is using letters or testimonials from buyers to sell the other fellow. A good letter is very helpful in merchandising, particularly if the giver happens to be a prominent business man.

#### Installing Equipment

The question of installation is an important one. Whenever practical, determine the cost of installing any device, equipment, etc.; also a policy as to whether the price to the customer will include the cost of installation or not. Some manufacturers have considered the advisability of allowing the dealer a certain sum for installation, sufficient to net the dealer an extra profit if installed in less time than that estimated, which is possible. This problem should be carefully analyzed by the dealer and consideration given to the time required.

The installation cost should be very carefully worked out, for the sale can easily be lost if the installation cost is out of proportion to the price of the device. For this reason it is suggested that the maker of the device be consulted, and all costs carefully analyzed before deciding upon the product to buy and sell. With certain equipment the dealer must exercise good judgment else he will have dead stock. Stocking for an equipment campaign is entirely different from selecting goods by mail order methods. The

## Equipment Inventory

Name—John Jones, 234 Oliver St., Hartford  
Tel.—Liberty 451  
Sold by—Henry Winters  
Man to see—John Jones  
Type truck—2-ton Model S  
Purchased—March 3, 1920  
Body—Express  
Purchased—March 6, 1920  
Lights—Oil only  
Odometer—No  
Speedometer—No  
Cab—No  
Jack—Poor condition  
Governor—No  
Tire Chains—No  
Extra Spark Plugs—No  
Pump (Hand)—Yes  
Prest-O-Lite Tank—No  
Non-Glare Lenses—No  
Extra Bulbs—No

Rear Signal—No  
Headlights—No  
Radiator Guard—No  
Oil Pump—No  
Condition—Poor  
Battery Condition—Poor  
Tires: Note type, size and condition  
Right Front—Pneumatic, 35 x 5; Good  
Left Front—Pneumatic, 35x5; Needs New  
Right Rear—Pneumatic, 38 x 7; Fair  
Left Rear—Pneumatic, 38x7; Needs New  
Spares: How Many—None  
Tubes: How Many—One  
Condition—Poor  
Tire Holder—No  
Truck, How Used:  
Business: Wholesale Groceries  
Average Daily Mileage—50  
Night Work—Yes  
Garage—Private  
Driver—John Mulligan



main consideration should be whether the device is best for the truck and owner, and such equipment should be selected that will give the best results in dollars and cents for the owner. Quality, serviceability and practicability are the factors which should determine the selection, not attractive discounts, for what you are after, Mr. Dealer, is to build confidence and good will so that you can sell the second, third and twenty-fifth time with a minimum of sales resistance. A priming device works well on the Blue engine, but it may not be so good for the Green engine, for the cost of installation on the latter may be out of proportion to the list of the primer. On certain standard articles the dealer will do well to consult with the factory and learn if it has made any tests or experiments with standard equipment; many have. The factory should be able to supply the information or, at least, names of their dealers who merchandise similar equipment. With such a list it should not be difficult to obtain opinions as to the practicability of the device.

It should not be difficult to sell the smaller and inexpensive articles, but these should be sold after the larger or more expensive have been ordered, for the price will not influence the prospect. If, on the other hand, you sell the prospect a \$5 article and then try to sell him a \$100 one the difference in price will register on his sub-conscious mind and react against the sale.

In addition to the subjects listed in the inventory form the following can be classified as logical merchandise for the truck dealer: Bodies, hoists, power pumps, lubricating systems (grease and pressure type) oils, greases, signals or whistles, sediment traps for fuel line, fan belts, windshield cleaners, and why not include a sun visor or shield?

As early stated in this article, goods must be sold. They can be with a little effort by acquainting your customers with the fact you have them. Why let your trade drift to the supply house, the cut price store where no service is rendered? Why not get this profit yourself?



**Three and a Half Ton Acme Doing Heavy-Duty Service, Hauling Sand and Gravel in Immense Excavation Contract**

When the Hudson Motor Car Co., of Detroit found that new manufacturing facilities and space were needed, orders were given to start construction work at once. Excavating for the foundations was the first step. How this part of the work was accomplished is shown by the above illustration of an Osgood 18-clamshell outfit loading a three and a half ton dump truck, which is one of a fleet of 12 Acme trucks.



**Semi-Trailer Transports Water-Well Drilling Outfit From Place to Place**

This outfit was formerly self-propelled and large-traction wheel equipped, but as it damaged the roads and consumed six to seven times as much time to travel from one job to another, the owners devised the above method, which is not only more economical, but less road destructive. The truck is a two and a half ton Harvey, operated by Kramer Bros., South Holland, Ill.



**Special Equipment Used by the Public Service Company for Setting Telegraph Poles**

The Public Service Company bought nine of these jobs for employment in the northern section of Illinois within the last sixty days. The chassis is a standard two and a half ton, Model DL, Master, equipped with a Walker double-reduction, balanced-gear, rear axle. The special equipment, installed by the purchaser, is operated by compressed air.

# Graham and MacDonald Speak at Highway Dinner

**I**T is to be regretted that the facts and figures presented by the speakers at the dinner of the Highways Committee of the National Automobile Chamber of Commerce, held at New York on March 1, were limited to the 60 odd representatives of publishers, writers, daily press, etc., for a number of erroneous impressions were corrected by authorities on highways and transportation. George Graham presented a clean cut analysis of motor highway transportation, and Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads, supplied some concrete and interesting facts about the public highways of the present and future. A general discussion followed the addresses of the principal speakers.

Edward S. Jordan, chairman of the dinner, introduced Mr. Graham after a few explanatory remarks as to the motive of the meeting. Mr. Graham, always a fluent and interesting speaker, gave an unusually concise and interesting analysis of motor highway transportation, clearly establishing the fact that the motor vehicle is not a luxury but an economic necessity. He pointed out its value in terms of real estate, farming and necessities of life and painted a picture of what would occur if the motor vehicle should be withdrawn.

## Value of Highways to the Farmer

Mr. Graham quoted figures from the U. S. Bureau of Records which proved that the average haul to market by farmers had increased in the last few years from 6.9 miles to 17.6, due to the availability and suitability of the motor truck.

After an interesting sketch of the evolution of transportation, stressing the fact that the automobile industry had

supplied in a few years transportation that was lacking for centuries, Mr. Graham proceeded to prove conclusively that the motor vehicle was not a competitor to the railroads or trolleys, although considered such by those ignorant of the facts. He stated that there were 18,000 miles of interurban trolley lines and that they transported 4,000,000 tons of freight annually. The Great Lakes and the Mississippi waterways afforded 15,000 miles of transportation and carried 90,000,000 tons. The steam railways hauled 2,504,000,000 tons annually and that the motor truck, the baby in the transportation field, hauled 1,200,000 tons a year. "The automobile is not replacing the trolleys," said the speaker, "only to a certain extent. The interurban transportation amounts to 13,000,000,000 paid passengers a year and 3,000,000,000 transfer passengers. The use of the trolley has increased 38 per cent in 20 years; that is, carry 38 per cent more per year, which is thirteen times that of the steam roads. The passenger car carries on an average of  $2\frac{1}{2}$  persons, or 25,000,000, or approximately about 25 per cent of the population. The city is a small user of motor cars for 72 per cent of the automobiles are sold in cities of 50,000 population and less and one-third of the total is in towns, villages and hamlets of 1,000 population and less. Nearly 67 per cent are used by families having an income of \$4,000 a year or less. Over 60 per cent of the passenger cars registered are employed for utility purposes."

Mr. Graham then sketched the value of the motor car and truck to the farmer, quoting the statements of Senator Capper as to investments, ton miles of products, etc., hauled in trucks and what highways mean to the farmer.

## One Cent a Day for Highway Transportation

Chief MacDonald made use of the penny in opening his remarks by stating that it cost each individual one cent a day for highway transportation, using the delivery of milk as an analogy. "In 1910 there was expended \$120,000,000 for all highway purposes," said the speaker, "of which about 40 per cent was for the horse drawn or agricultural sections. In 11 years cars have increased in number 1800 per cent but road improvements only from 300 to 400 per cent. In 1921 the accumulated investment in roads for the 11 year period was \$2,526,000,000, exclusive of maintenance charges, while the rolling stock, motor vehicles, is \$8,322,000,000, or three times the roads investment. The expenditures last year, Federal, State, etc., and outside of municipalities, was \$600,000,000, about one cent a day for all."

"It seems to me that the personal benefit we receive from the food transported over the highways to us should at least be greater than to the extent of 1.2 cents a day. The Federal Government contributed last year 14 per cent of the total highway bill and automobiles paid 19 per cent in direct taxes, and 67 per cent from other sources." Chief MacDonald controverted the statements made that roads in certain States would be worn out before the bonds matured and explained how these roads were being utilized by linking them up with new construction and the saving effected thereby. He also discussed sub soils and their effect on highways. He said that \$180,000,000 was needed to complete the Federal plan which would link each county seat, that it would take 20 years to complete the highways on the present basis of appropriation.

Among the other speakers was Lawrence Abbott, who pointed out the value of good roads and their relation to public schools. He quoted the high grade schools, which were made possible in Mississippi through the combination of good roads and the automobile.

E. J. Merren, editor of Engineering News Record, sounded a most pertinent note when he pleaded to keep good roads out of partisan politics. He said the short time the engineer remained in office was a detriment to efficiency. In speaking of taxes, he said: "It is going to be far worse to overtax the motor vehicle than to undertax it, because by being drastic at the present time you may considerably, or somewhat at least, retard a very important development and one that will have a tremendously important effect upon the country, and among these are the schools as pointed out by the previous speaker."

## Champion Ignition Changes Name

To link up the trade name with the name of the firm manufacturing the product, the Champion Ignition Co., of Flint, Mich., manufacturer of AC spark plugs, will change the corporate name to the A. C. Spark Plug Co. The change becomes effective April 1.



**Two Seven and a Half Ton Trucks Equipped With Heil, Model SSC, 10 Cubic Yard Coal Bodies and No. 6 Hydro-Horizontal Hoists**

As may be noted, the sides of the body are hinged. A collapsible chute is also provided on each side at the rear of the body. The platform is extended and acts as a mud-guard for the rear wheels.





# EDITORIALS



## Specific Cost Figures an Aid to Sales

THE use of cost figures in connection with motor truck sales is not a new subject. Many of the larger dealers can supply cost figures which have been gathered over a period of years, and these are fairly accurate. But there are many dealers, especially in smaller towns, and newcomers in the large cities, who have very little to offer in the shape of authentic cost figures, and to such dealers we recommend that they gather as many figures from different concerns as they possibly can obtain, for future sales work.

One of the best sales arguments which any dealer can have consists of authentic records of what his trucks are accomplishing in the hands of users in his particular locality. All the arguments on specifications, fuel economy, up-keep costs, etc., are not half so impressive to the prospective buyer as the recommendations or figures obtained from another business house in the same locality.

Every new dealer should, therefore, make it a point to obtain as many records of successful truck installations in his vicinity as possible. These cost figures should not only consist of merely a lot of figures, but should contain other information which might help toward making the prospective purchaser's equipment a paying one from the start. Information regarding loading facilities, the routing systems and even down to the driver's salary, are factors which many times have a bearing on the successful installation of a truck.

The dealer should also keep in close touch with the owners in his territory, and continuously impress upon them the necessity for keeping accurate cost records for their own benefit. By so doing, the dealer will not only learn what his trucks are actually accomplishing, but it will be the means of forestalling many kicks, and give the dealer a chance to obtain valuable information. A good word from one satisfied owner to the effect that his trucks are saving him a lot of money, will do more to close a sale than all the arguments on price and specifications combined.

## Motor Bus Officially Recognized

NOTHING should be received with more gratification by the motor truck industry than the recognition accorded the motor bus at the recent convention of the American Electric Railway Association, at Indianapolis.

For a long time the electric railway interests have considered the motor bus as an intruder on their rights to exclusive control of passenger transportation in our large cities. The railway interests have adopted a "hands off" policy for some time, believing that the motor bus is not the vehicle which could meet demands for better service to the public.

But regardless of their antipathy toward the bus, they have at last realized that the motor bus is not a temporary expedient toward solving our passenger transportation problems, but that it is, and will become more so as time goes on, the greatest ally of the electric transportation field.

Wherever motor buses have been applied correctly they have made good. Many examples of successful motor bus lines now operating in this country are proving that the motor bus can be made a successful adjunct to existing trolley lines that need not be extended. The fact that this association has recognized the motor bus officially, by not only making this subject the major one on its program, but also by going on record for the first time as a body regarding its attitude toward the motor bus, should be an encouraging sign for every motor truck manufacturer and dealer. It should eliminate all further accusations against the railway field that it is opposed to motor buses. It does not indicate, however, that every electric railway company will purchase motor buses immediately, but it does indicate that the recognition given the bus by over 800 electric railway companies is conclusive evidence, that they realize that the motor bus is not to be regarded any longer as a competitor, but that in most instances it will be a life saver. Track extensions to present trolley systems are out of the question. The bus extension is the most practical and economical.

***Don't confuse truck service with passenger car service. The average truck owner doesn't mind a little grease on the steering wheel when the truck comes out of the shop—but he will throw a fit if the bill is too high or because the truck was held in the shop too long, all on account of the fact that the shop didn't have the proper tools and equipment.***

The April Number of the CCJ will tell how a shop can be made to pay and will discuss the SHOP EQUIPMENT that is most essential

# News of the Trade in Brief

Personal, Factory and Dealer Notes on Pages 78, 80

## Yes, the Truck Industry is Improving

Within the last few weeks, incontestible signs have appeared proving that the automobile business is improving. The most encouraging omens come from those big industries which go hand in hand with the motor vehicle industry.

And with the rest of the improvement, the truck industry is keeping pace. Of course the improvement is not large, but it is definite and gradual. Truck manufacturers and large dealers recognize this improvement and are going to take advantage of it.

The percentage of increase of sales for January, 1922, over those of the past six weeks range from 10 to 25 per cent. In most cases the January sales figures are greatly in excess of the figures for the past six months of 1921. Bigger sales can be looked for in the February report and March will still see an improvement.

The price reduction wave seems to have abated. Although these reductions had a slight stimulating effect at the time of their announcement it is now generally conceded that they were not entirely successful and that they did much to destroy the confidence in the industry.

Although price remains a very important factor in buying trucks, there is more consideration being paid by the buyer to low operating costs and efficient service. Endurance and stability is also demanded.

Truck models from 1 to 2½-ton capacity are meeting with the greatest demand, but there is also an improvement noted in the heavy duty line.

The Federal Reserve Bank of Chicago makes the following report on the industry: "Truck manufacturers producing approximately 98 per cent of the total December output, report 9,127 trucks built in January compared with 8,183 trucks in December, an increase of 11.5 per cent."

## Would Impose Truck Tax in New York State

ALBANY, N. Y., February 26.—Recommendations dealing with the taxation of motor vehicles are included in the annual report of the State Tax Commission made to the Legislature. These recommendations provide that the weight of the car be made the basis for the computation of automobile license fees with a premium fee of \$8; that the license fees for motor trucks be increased at least one-third; that an operator's license law be enacted to require of a car in the state to have an annual license for which a fee of \$1 be paid. Among other things, there is a recommendation for a tax of one cent a gallon on the consumption of gasoline. This gasoline tax would net \$4,500,000 yearly.

## Electric Auto Show Planned for New York

The second annual electric automobile show will be held at the Irving Place showroom of the New York Edison Co., New York City, April 3 to 15, 1922. The display will be divided into two periods, the first week to be devoted to street trucks and passenger cars and the second to industrial trucks.

## Coming Events

### SHOWS

- March 20 to 25, 1922—White Plains, N. Y.** Second Annual Show, State Armory. James J. Callahan, Mgr., P. O. Box 1186, Pittsfield, Mass.
- March 22 to 26, 1922—Ann Arbor, Mich.** 3d Annual Show of Washtenaw County Auto Dealers' Assn., Coliseum (20,000 sq. ft.). Passenger Cars, Trucks and Accessories. R. H. Alber, Mgr., care of Ann Arbor Garage.
- March 27 to April 1, 1922—Oklahoma City, Okla.** 6th Annual Show of the Oklahoma City Motor Car Dealers' Assn., at New Coliseum. Passenger Cars, Trucks and Accessories. Edgar T. Bell, Sec., 403 Oklahoma Bldg.
- March 27 to April 1, 1922—Torrington, Conn.** Annual Show, auspices of Co. L, State Armory. J. J. Callahan, Mgr., Pittsfield, Mass.
- April 3 to 15, 1922—New York City.** Electric automobile show, New York Edison Co., Show Room, Irving Place. Street Trucks and Passenger Cars, Industrial Trucks.
- October 7 to 14, 1922—New York City.** Electrical exhibit at Grand Central Palace. Electric Automobiles. Norman Maul, 130 East 15th St., New York City.

### CONVENTIONS

- Atlantic City, N. J., June 26 to July 1, 1922—** 25th Annual Meeting of American Society of Testing Materials at Chalfonte-Haddon Hall Hotel. J. K. Rittenhouse, Asst. Treas., 1315 Spruce St., Philadelphia, Pa.
- Colorado Springs, Colo., June 19 to 24, 1922—** Summer convention of the Automotive Equipment Association, Broadmoor Hotel. Wm. M. Webster, Comm., 1813 City Hall Sq. Bldg., Chicago.
- Decatur, Ill., March 20, 1922—Third Annual Convention of Illinois Automotive Trade Assn. Executive Offices, 11 Lermann Bldg., Peoria, Ill. F. C. Zillman, Mgr.**
- Milwaukee, Wis., June 11 to 15, 1922—Eighteenth annual convention of Associated Advertising Clubs, 110 West 40th St., New York City.**
- Philadelphia, Pa., May 10 to 12, 1922—Ninth Annual Convention of the National Foreign Trade Council. O. K. Davis, Sec., 1 Hanover Sq., New York City.**
- Santa Barbara, Cal., October, 1922—Annual General Convention of the California Automobile Trade Assn. Robert W. Martland, Sec., Pacific Bldg., Oakland, Cal.**
- Trenton, N. J., May, 1922—Annual Convention of the New Jersey Automotive Trade Assn. H. S. Moore, Sec.-Treas., Trenton.**
- White Sulphur Springs, W. Va., June 20 to 24, 1922—Summer meeting of the Society of Automotive Engineers. Greenbrier and White Hotels.**

### FOREIGN EVENTS

- Amsterdam, Netherlands, March, 1922—Auto-moblie Exposition.**
- Mexico City, Mexico, April 16 to 23, 1922—** First Annual Automobile Show of the American Chamber of Commerce in the National Theater (23,000 sq. ft.). Passenger Cars, Trucks, Tractors and Accessories.
- Prague, Czechoslovakia, April 22 to May 1, 1922—14th International Automobile Exposition, auspices Czechoslovak Automobile Club, Prague.**
- Santiago, Chili, March, 1922—Annual Automobile Show.**
- Scheveningen, Netherlands, May 1 to 15, 1922—Automobile Exhibit. Address, No. 185 Spul., The Hague.**

## Rubber Association Starts Warranty Campaign

To aid the dealer in introducing the new standard tire warranty plan approved by the Tire Manufacturers' Division of the Rubber Association of America, Inc., representing 125 manufacturers, placards have been mailed to 125,000 tire dealers throughout the country.

The Standard Warranty defines the manufacturer's responsibility as follows: "We do not guarantee pneumatic automobile tires for any specific mileage, but every pneumatic automobile tire bearing our name and serial number is warranted by us to be free from defects in workmanship and material. Tires claimed to be defective will be received only when all transportation charges are prepaid and when accompanied by this company's claim form duly filled out and signed by owner. If, upon examination, it is our judgment that the direct cause of the failure of the tire to render satisfactory service is attributable to faulty material or workmanship, we will, at your option, either repair the tire or replace it for a charge which will compensate for the service rendered by the returned tire, based upon its general appearance and condition."

The poster further states that the new conditions are better for the consumer because they mean: "More equal treatment of users. Less controversy between dealers and consumers. Elimination of abuses which have hampered manufacturers' efforts at tire economy. The selling of quality instead of a too liberal adjustment policy. The usual fair treatment of careful users—but only fair treatment of others. More sound merchandising by manufacturer and dealer."

## Big Demand for Bus Bodies

The Greenfield Bus Body Co., Greenfield, O., has had a very large demand for their different types of bus bodies which are made for all chassis. This company is one of the oldest builders of bus bodies, having devoted practically their entire facilities to the manufacture of bodies of this type for several years. They are pioneers in this line of work and offer a great many different types of bus bodies in many different sizes.

"We foresaw the coming demand for bus bodies several years ago and prepared for it" said an official of the Greenfield Company, "and we believe that the bus business is still in its infancy. We are constantly making careful surveys and investigations to determine the best types of bodies to meet particular transportation problems and thus we are able to offer several different types of bodies, each one meeting a particular requirement."



## Major Ireland on Lincoln Highway Project

Major Mark L. Ireland, QMC, U. S. A. Director of the Tractive Resistance of Roads Research being conducted by the Army with the aid of the Massachusetts Institute of Technology, at Cambridge, Mass., has been detailed by the Secretary of War to represent the United States Army on the Technical Committee appointed by the Lincoln Highway Association to determine the design for the Ideal Section which the association will construct this year for object lesson purposes, a large portion of the funds being provided by the United States Rubber Company.

The research relative to the Tractive Resistance of Roads which is being conducted by Major Ireland with the facilities of the Massachusetts Institute of Technology and with the assistance of the Mason Laboratory of Yale University, is a work of great importance to the Bureau of Public Roads.

## Motor Transport Gaining in Great Britain

Railway companies in Great Britain are being offered serious competition by motor highway transport, which is making great headway and is viewed with considerable alarm by railway officials, according to reports received by the Automotive Division of the Department of Commerce. High railway rates, an excellent system of highways, and the release of large numbers of motor vehicles formerly used for military purposes together with the men who drove them, all combined with a winter climate not unduly severe, serve to advance this competition. However, in some quarters its importance is thought to be overestimated, because motor traffic will ultimately be compelled to bear its proportion of taxes for maintenance of the highways; furthermore, doubts exist as to whether any of the motor transport companies are setting aside the proper sums for repair and renewal of vehicles.

The number of road transport undertakings in operation in 1921 was 3,000 with a capital of £117,000,000, exclusive of business men who use their own fleets of motor trucks. A recent press estimate of merchandise hauled by road transport in the United Kingdom in 1921 was 6,000,000 tons.

## Ford Planning Triangular Offer

A passenger car, a truck and a tractor for \$1,000 is the aim of Henry Ford, according to General Beach, chief of the Corps of Engineers, U. S. Army, which is investigating the Muscle Shoals problem. Mr. Ford is now attempting to lower his production costs to make possible the three-unit proposition. The plants to be built at Muscle Shoals, if the site is acquired, will be used for motor vehicle production.

## Hargrave A. Long Heads Group Committee

For the further advancement of the specialized group plan of the Motor and Accessory Manufacturers' Association, Hargrave A. Long has been appointed manager of the Group Department. Mr. Long was secretary and treasurer of the Automotive Wood Wheel Manufacturers' Association, which has now become the Wood Wheel Group of the M. & A. M. A.

Three groups are already in operation: the Leaf Spring, the Sheet Metal and the Wood Wheel. Other groups contemplated are: Asbestos products, Axle, Bearing, Bumper, Carburetor, Chain, Clutch, Engine, Fan, Forging, Foundry, Gear, Headlight Device, Piston Ring, Radiator, Sheet and Pressed Metal, Shock Absorber, Spark Plug, Spring, Starting, Lighting and Ignition, Steel Producers, Steel Products, Top, Transmission, Warning Signal, Wheels and Windshields.

## Moock and Hay Resign From Office

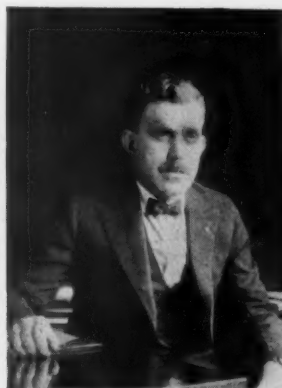
Harry G. Moock, manager of the National Automobile Dealers' Association for over three years, has resigned that office and will direct the new merchandising department of the Hudson Motor Car Co. His resignation was presented to the directors at a meeting in St. Louis, February 13, at which time Thomas J. Hay, of Chicago, resigned from the presidency to which he had been elected only a few days previous at the annual meeting in Chicago.

W. J. Brace, Hudson Essex distributor at Kansas City, and long a hard worker in upbuilding the National dealers' organization, was elected to succeed Mr. Hay, and C. A. Vane, counsel for the association for several years, was elected manager to succeed Mr. Moock.

The retirement of Mr. Moock will be received with general regret by both factory and dealer executives all over the country. He has done more than any other one man to bring about better conditions among dealers generally, and to better the relations between dealer and factory. He has been absolutely tireless in upbuilding the national association and in directing its efforts along the very broadest constructive lines.



W. J. Brace  
Newly appointed president of  
the N. A. D. A.



G. A. Vane  
Who succeeds Mr. Moock as  
general manager

## Governor Sees Prosperity in Motor Transportation

"The establishment of motor truck express lines in every farming community will stimulate the production of more food, reduce the cost of living and probably will make public markets successful in America," said Gov. Oliver H. Shoup, of Colorado, before a meeting of the Pikes Peak Ocean to Ocean Highway Association in session at Springfield, Ill. The Governor stated further that good roads in the country will do more to lower the high cost of living and promote the prosperity, comfort, culture and happiness of the people than things fought over in twelve presidential campaigns.

Quoting from Government statistics for 1918, he declared that "it cost 30 cents per ton per mile to haul wheat by wagon as against 15 cents by truck. Statistics further show that it costs, on good roads of hard resistance surfaces, 8 cents to haul one ton per mile. On poor roads this cost increases materially as compared to what it would cost if we all had good roads.

## Government Motion Pictures Boost Good Roads Movement

In line with its policy of informing the public, especially those who pay the taxes, as to the economies that may be effected in the construction of highways, as well as the proper methods of construction, the United States Government, through the Bureau of Public Roads, Department of Agriculture, has just completed for free distribution and use in motion picture houses as well as at conventions, chautauquas and educational conferences throughout the country, two reels of pictures showing in detail the construction of the various types of asphalt roads.

The pictures were taken last summer in New York, New Jersey, Pennsylvania and other states under the direction of E. J. Wulff, senior highway engineer, U. S. Bureau of Public Roads, and E. J. Kelly, of the Motion Picture Division, United States Department of Agriculture. The pictures were produced particularly for the purpose of showing how the best results may be obtained in asphalt construction. They are loaned to responsible parties free of charge, except for transportation costs.

## "Yellows" in Chicago Number 1,497

To the Chicago visitor who sees swarms of Yellow taxicabs, it may be news to learn that there are 1,497 "yellows" in operation. This is the official figure given out by the Yellow Cab Co., but new cabs are being added from time to time.

Courtesy and unfailing dependability, together with a very low rate of fare, have built up this cab system until it is without a peer in this country. Organization is another factor.

## New York Dealers Strong for Service Association

ONE of the best attended meetings of the Automotive Service Association of New York was held Thursday evening, March 2, with President Henry M. Holt in the chair. The topic for discussion was "Lowering the Cost to the Owner," Glenn Tisdale, president of the Automobile Merchants' (Dealers') Association, addressed the members, and said among other things that the dealers were 100 per cent behind the service association. This recognition is appreciated by the active workers in the association, and is the result of long and persistent efforts to sell the New York dealers that the association is for their benefit, which means more sales of new cars, and not in any sense a labor organization. That the New York dealers are beginning to realize the value of the association is shown by the large number of longer established and well-known dealers who are supporting the association house organ. Another noteworthy feature is the number of truck service managers joining.

Mr. Tisdale's remarks were very much to the point in his talk on lowering costs to the owner. His remarks were based on years of experience in selling and service. His opinion is that the owner was more concerned in having his car's trouble **correctly diagnosed and repaired** than in the cost. He pointed out that too frequently cars and trucks are hurriedly disassembled to locate a trouble, only to find it elsewhere. What was needed, he said, **was skillful diagnosticians**. The repair or mechanical work is incidental.

### Need for Good Contact Men

Another suggestion made was to develop a high grade type of man who greets the owner when he calls at the service station. He should be an unusually tactful man and very courteous. He should listen to the complaints and be courteous even when the owner becomes hot-headed or discourteous, for some times the owner makes absurd statements. Under these conditions the greeter should refrain from combatting the owner by showing the latter he is ignorant. It is a position of importance.

President Holt opened the general discussion by a few remarks on service stations, equipment, tools, policies, organization, etc. In speaking of equipment he stressed the vital need of **up to date time and labor saving equipment and tools, stating that they were absolutely necessary in rendering service today**. He also pointed out that it was the duty of the service manager to keep posted on new equipment, etc., and that it devolved on the shop foreman to study these new tools, and how they could be applied so that the time element of an operation could be reduced. Good equipment, said the speaker, meant better and cheaper work for the owner.

The report of the technical committee by Ralph Rognon disclosed that the com-

mittee is gathering a mass of data on cars and trucks which will be classified and distributed to the service stations so that work may be expedited. The committee on labor made a report.

While the mechanics were present in goodly numbers, they having been invited to attend and give their views on service, they proved better listeners than talkers although one or two spoke. This was expected for the mechanic is naturally bashful when it comes to addressing a meeting. They were, however, invited to send their opinions, comments and suggestions to the association and privilege was given to make the communications anonymous, if they so desired.

The committee on the annual ball made its report and stated that there was a net profit of over \$2,000. Ralph Rognon won the first prize for selling the most advertising in the program, and J. Willard Lord was a good second, and also a prize winner. The next monthly meeting will be held April 6.

## Bus Company Fights for Fewer Accidents

The Fifth Avenue Bus Co., of New York, America's largest bus operators, have become convinced that the observance of "the courtesies of the road," would avert almost all the numerous accidents charged against automotive vehicles and have inaugurated a campaign to enforce these courtesies. On the tops of the buses placards have been placed driving home the lesson in a convincing manner. Some of the most striking signs are: "No Accidents Where Road Courtesy Prevails"; "Civility Driving Avoids Accidents and Assures to Others Courteous Consideration," and "Our Drivers Offer Courtesies of the Road—What is Your Response?"

## Midwest is Reorganizing

A reorganization plan providing for a million dollars of new working capital, which will place the company in a strong financial position, has been worked out for the Midwest Engine Company of Indianapolis, Ind., and will be put into effect shortly.

The position occupied in the trade by the products manufactured by the Midwest Co., together with the new financial structure, where its ratio of quick assets to quick liabilities will be practically ten to one, will insure the permanence of the company's future and permit the company to meet the growing demand for its products.

## Correction

Through error, the price of the Model K 16 one-ton truck of the General Motors Truck Co., appearing in a note on page 63 of the January 15th issue, was stated to be \$1450. The correct price is \$1495.

## Timken Axle States Its Position

Just before going to press the following telegram has been received from the Timken Detroit Axle Co., of Detroit, Mich.:

"Recent rumors concerning the Timken Co. cause us to feel we should clearly state our position. We are not in a combination with parts makers, either in the sale of units or servicing, nor are we in any combination with any automobile or truck manufacturer. The Timken Detroit Axle Co. is in business to manufacture axles and sell them to any one willing and able to buy and pay for them. It happens that for the purpose of servicing the users of our products, we are selling parts to a number of parts stations who also happen to sell the products of other well known unit makers, but this is purely an arrangement between us and the parts stations and not a group arrangement between the unit makers. We feel we owe this statement to ourselves, to our customers and to the trade in general. Briefly, our position is this: We are axle manufacturers, we own and control our business, and consider every automobile and truck manufacturer as a possible customer. Every arrangement we have is a very simple contract for the sale of axles at a definite price. Our interest in the customer we sell to is purely one of serving as is unit maker."

A. R. Demory, President.

## Cravens Becomes Climax President

George W. Cravens, formerly of Westfield, N. J., has been elected president of the Climax Engineering Co., of Clinton, Iowa. Mr. Cravens was for many years with the General Electric Co., the Elkhart Carriage & Motor Car Co., the American Motors Corp., and the Universal Body Co. He has had a wide engineering and commercial experience. G. W. Dulany, Jr., has been elected chairman of the board of directors, and C. B. Stebbins re-elected vice president.

The Climax Engineering Co., with this addition to the active executive management, will therefore be in a position to go ahead with the broader plans recently formulated for it. The company is in a very good financial position and a particularly good year is anticipated for the Climax engines.

## One-Ton Truck Predominates in Ontario

Figures compiled from motor truck registrations in the Province of Ontario, Canada, reveal the fact that out of 19,800 trucks in use at the end of 1921, no less than 72 per cent were of the one-ton size. Statistics released also indicate that 13.35 per cent of all trucks are of a half-ton size; 4.58 per cent are of 1½-ton capacity and 4.5 per cent are two-ton models. Trucks of a size over two tons represent 5.43 per cent of the total, or about 1,080 models.



# NEW COMMERCIAL CARS



## FWD Announces Short Wheelbase Road Builder

ONE of the most recent developments of the Four Wheel Drive Auto Co., Clintonville, Wis., manufacturers of FWD trucks, is what is known as the Road Builder. One of the biggest features of this new truck is its short wheelbase of 105 in., which gives it an exceptionally short turning radius and makes it valuable as a time saver in making turns on the narrow grades without the difficulties often encountered with trucks of the long wheelbase type. This truck is designed to carry a 3-batch body of 3 tons capacity, the body to be operated by a horizontal hydraulic hoist and the tail gates to be operated individually. The truck is also designed to be used as a tractor for trailing loads to the concrete mixers and for hauling road machinery.

The company states that only quality materials and supplies are used in the construction of this job and that they are carefully selected, tested and inspected. All parts are interchangeable and made with jigs. In connection with parts, a feature makes itself apparent in the provision of factory numbers on each unit to facilitate ordering replacements for repairs.

The following is a resume of general specifications: Capacity, 6000 lb.; allowance for body and hoist, 2400 lb.; weight of chassis with pressed-on tires, 6175 lb.; tread, 60 in.; turning radius, 20 ft. 6 in.; speed, 15 m.p.h.; clearance, 9 11-16 in.; total length overall, 181 in.; and capacity of gas tank, 20 gal.

The engine is a 4-cycle, 4-cylinder, cast in pairs type Wisconsin, having a bore and stroke of  $4\frac{3}{4}$  in. x  $5\frac{1}{2}$  in., respectively, and suspended by arms from four points. The crankshaft rotates in three liberal sized main bearings. This engine has an S. A. E. rating of 36.1 hp. and is capable of developing 54 hp. at 1350 r.p.m. Speed control is provided by a Pierce governor set at 1350 r.p.m. Lubrication is furnished by the force and splash system.

Ignition is by a high tension, water proof, Eisemann G-4, 2nd edition, equipped with an impulse starter. The carburetor is a  $1\frac{1}{2}$  in. Stromberg having a hot air connection. The cooling system, which has a total capacity of  $10\frac{1}{2}$  gal. of water, includes a centrifugal high speed water pump; high speed four-blade, belt-driven fan 20 in. in diam., and a tubular type radiator. The fan belt is self-adjustable; is  $1\frac{1}{4}$  in. wide and  $\frac{1}{4}$  in. thick.

From the engine the power is carried back through a Hele-Shaw multiple disk clutch to a dog clutch type transmission providing three speeds forward and one reverse. The sub transmission is connected directly with the transmission, and built in one housing. The center differential is driven by a silent chain. This chain, which is of the Link Belt pattern, is self adjustable and runs in a constant bath of oil. Speed is gradually reduced, beginning at the transmission, which has a reduction of 4 to 1, low; 2 to 1, second, 4.13 to 1, reverse; and direct speed on high. The second reduction of speed is made in the sub transmission, making a

reduction of 2.06 to 1. The third and final reduction is made on the differentials of the rear and front axles, having a reduction of 4.03 to 1, which makes the total reduction as follows: 35.6 to 1, low; 17.8 to 1, second; 36.7 to 1, reverse; and 8.9 to 1 on high. The gradual reduction of speed permitted by this design, in connection with free working differentials, is claimed to prevent undue strain or shock on any part of the driving mechanism. Blood-Bros. universal joints are used throughout.

Steering is through a Ross, irreversible, worm and nut type steering gear, provided with a 22-in. steering wheel. Drive is taken through the springs and torque rods are provided to take up the torque of the axles. The springs are semi-elliptic construction in front and platform spring in rear.

Both front and rear axles are full floating, the front differing only, in that it is of the axle ball and socket type. Service and emergency brakes are provided. The external service foot brake is on the driving shaft and is 10 in. in diam. and  $3\frac{1}{2}$  in. wide. The external emergency brake is 15 in. in diam. and  $2\frac{3}{4}$  in. wide.

A feature of the frame construction is a set of four forged steel trailing hooks provided on the front and rear right and left hand sides of the frame members.

Standard equipment furnished with this job includes the following: seat cushion, jack, pair side lamps, oil tail lamp, warning signal, 3 silent chain pin complete, wrenches, tool kit, tools, etc.



Two Views of the New FWD Road Builder. This Job is Featured by Its Short Wheelbase of 105 in. Body is Operated by a Horizontal Hydraulic Hoist

## New Features in Kelland Electric

**I**N the design and construction of the Kelland Model B,  $\frac{3}{4}$  to 1-ton electric, no effort was saved to increase efficiency by attaining simplicity, durability and reduction of unsprung weight. Unnecessary weight has been eliminated without sacrificing strength wherever possible. The heavy steel underslung battery compartment has been eliminated by placing battery in body, partly under driver's seat, where it is readily accessible, thus also allowing maximum road clearance.

Double reduction straight line drive, it is said, has reduced to a minimum the angularity of the drive through universal joints, thus decreasing current consumption. Rear spring suspension is of the modern "drive through the springs" type, reinforced by a sturdy rear spring bar.

No extreme radical or unusual features of design or construction have been incorporated in this model, only established and standardized principles of construction being employed. The wiring system is comparatively simple. The chassis is equipped with two brakes, both operating on rear wheels.

One full battery charge is sufficient for a mileage of from 45 to 60 miles at a rate of 15 m.p.h. The transmission provides four speeds forward and two reverse.

Power is transmitted from a General Electric motor equipped with G. E. controller of the continuous torque type and rheostat of the cast grid street car type to a bell type transmission, having helical gears in permanent mesh, in unit with the motor. The propeller shaft is equipped with Spicer universal joints of the slip joint type. Final drive is through a single reduction, full floating type, spiral bevel gear rear-axle. Braking action is provided through two systems; the service brake, external contracting on rear wheel drums, and emergency brake, internal expanding in rear wheel drums. steering is through a Ross irreversible,

solid nut and screw type steering gear.

The front axle is of the conventional I-beam construction, but of heavy die forged material. Chrome silico manganese steel springs support the pressed steel,  $4\frac{1}{2}$  in. channel section, frame. The steel casted spring hangers are bronze bushed wherever necessary. The heavy

artillery wheels, 12 spoke, furnished with S. A. E. standard rims, run on taper roller bearings and are equipped with solid tires, 34 x 3 in. front, and 34 x  $3\frac{1}{2}$  in. rear.

This job, when equipped with standard panel body and 60 cells Edison A-5 battery, weighs 4100 lb. The standard equipment includes two electric dash lamps, tail lamp, horn, tool kit, odometer and charging plug.

## New General Utility Truck

**T**HE new U. S. General Utility truck now being produced by the United States Motor Truck Co., Cincinnati, Ohio, should not, according to a statement given out by the manufacturer, be classed or confused with trucks of the speed truck class.

This truck is offered as a sturdy motor truck suitable for the miscellaneous need of lighter hauling. It is not a speed truck, but a dependable hauling unit, sturdy and strong in construction, and economical in performance.

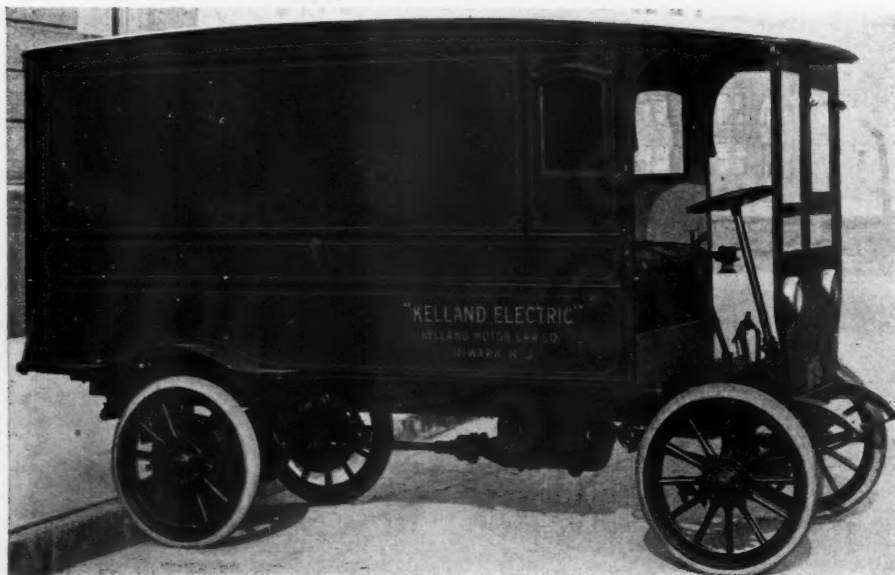
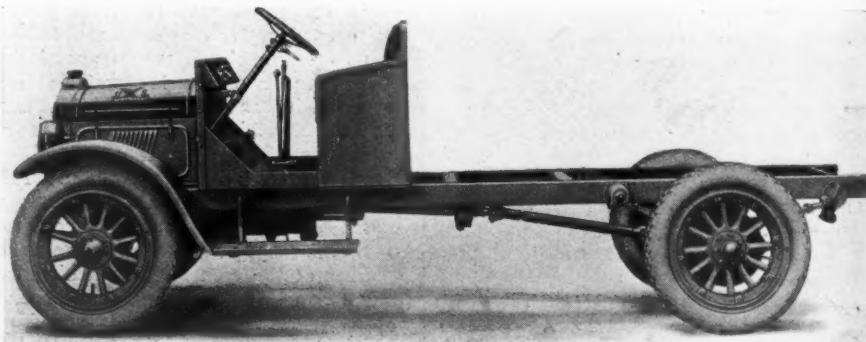
The engine of this model "U" Utility truck is a four cylinder, cast in block, detachable head type, suspended from three

points, and having a  $3\frac{3}{8}$ -in. bore and  $5\frac{1}{8}$ -in. stroke. S. A. E. gives a horsepower rating of 20.25, although with a working speed of 1400 r.p.m. it is capable of developing approximately 30 hp.

Ignition is by generator and storage battery. Gasoline is fed to the carburetor by gravity. Lubrication is by the force feed system, in which system is included a submerged oil pump. Water is circulated through the ample sized water passages by a centrifugal pump.

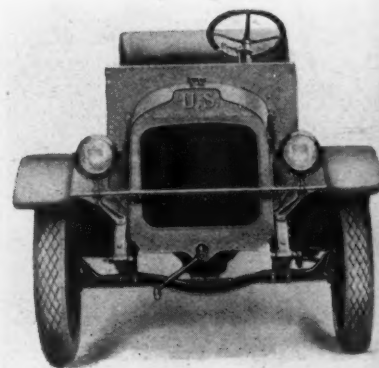
Standard equipment on the engine includes generator, starting motor with Bendix drive, and power air pump.

The Firestone patent steel felloe equip-



Side View of the Kelland Model B, One-Ton Electric

Note general atmosphere of simplicity. Batteries are carried in body under seat.



Front and Side Views of the U. S. General Utility Chassis Recently Announced

ped wood wheels are furnished with pneumatic cord tires, 34 in. x 5 in. in the front and 34 in. x 5 in. in the rear. The instrument board on the dash is equipped with lock switch, ammeter, oil pressure gage, and speedometer driven from the transmission gear.



## Anthony Heavy-Duty Automatic Rocker Body

**T**O meet the demand for other and larger Anthony Automatic Rocker Bodies adaptable to heavier chassis, the Anthony Co., Inc., Streator, Ill., recently brought out a heavy-duty model, which retains every desirable operative feature characteristic of the other models.

In both design and operation it is similar to the smaller Anthony bodies. The loaded body is released by a lever at the driver's seat, whereupon it dumps of itself. Upon complete disposal of the load, the body automatically returns to its normal horizontal position. The tail-gate latches automatically.

Scooperouts, wing boards, partitions, etc., are supplied and fitted on order. The accompanying illustration shows a partition installed in the body, dividing the load into two batches. This equipment is especially useful to the contracting trade for serving large concrete mixing pavers of four or five batch capacities.

Besides, the advantages to be derived from these partitions, operatable from either the seat or at the side of the truck, an improved splash arrangement is provided, which is shown in the illustration, that is claimed to absolutely prevent a slop over of material from the front compartment when the loaded body is tipped. A two-yard body so equipped, has capacity for two batches of four-bag mix for serving a paving mixer. The 2½-yard body with partition will carry two five-bag batches.

A prop is arranged to hold the body in the tipped position during time mixer is being served.

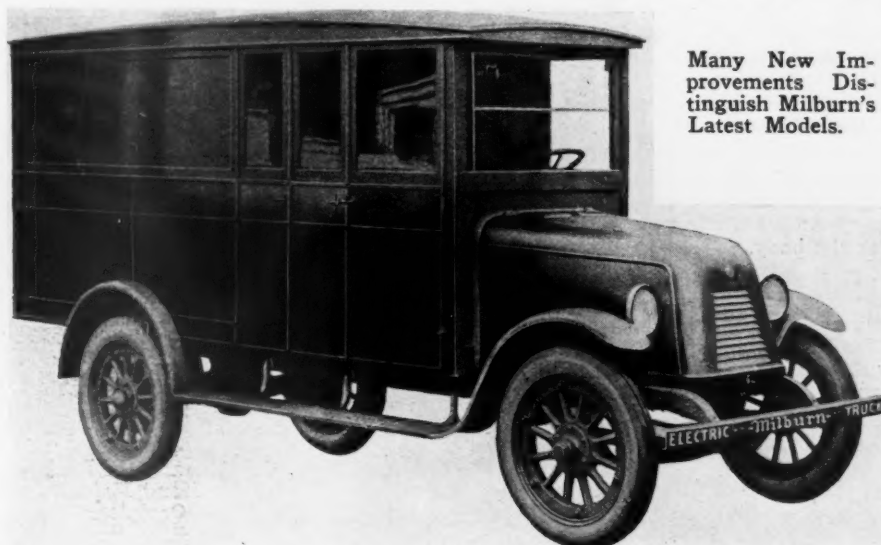
These heavy duty models are offered in 1½, 2, and 2½ yard capacities and weigh according to size and accessory equipment. The inside dimensions of the 2-yd. model are: 8 ft., length; 62 in., average width; and 15 in., depth. To fit a stock job, the chassis frame must be from 33

in. to 34 in. in overall width. The body is made of No. 8 and 9 gage blue annealed sheets, welded at joints. The frame and body castings are of electric steel.

### Milburn Announces New Electrics to Its Line

The Milburn Wagon Co., Toledo, Ohio, manufacturers of electric passenger cars and trucks, announces the addition of two new truck units to its line, which formerly included only one commercial model, a 750 lb. delivery truck.

It is said the new Milburn Electric trucks incorporate many radical changes in design. New and improved features have been added with the direct purpose of making these trucks particularly suitable to the continuous grind of hard commercial service required in business deliveries.



Many New Improvements Distinguish Milburn's Latest Models.



New Heavy-Duty Model Recently Added to the Anthony Line of Automatic Rocker Bodies. In Both Operation and Design It Is Similar to the Smaller Anthony Bodies

These trucks are especially recommended for employment by bakeries, laundries, milk companies, department stores, etc., because, it is stated, of their freedom from service interruptions, and ability to operate on schedule in all weathers. In anticipation of this demand the market is being offered both a half ton and one ton truck especially adapted to frequent stop service of city business deliveries.

### Sandow Introduces New Taxicab

The Sandow Motor Truck Co., 3323 W. Grand Ave., Chicago, Ill., recently announced to the trade a new taxicab, which not only incorporates many refinements in design, but is said to have that durable construction necessary in the severe activity of taxicab service. Interior upholstery and appointments are such as to provide the rider maximum comfort and satisfaction. Low operating cost and attractive appearance are other features.

The following is a brief outline of the most important units of this taxicab:

Continental, four-cylinder engine mount-

ed in unit with a multiple disk Brown-Lipe clutch and three-speed Brown-Lipe transmission. Gasoline is fed from an 18-gal. tank by the Stewart vacuum system to a Stromberg carburetor. Starting, lighting and ignition is by Bosch. The high tension Bosch magneto is the latest DU 4 type, variable spark.

Two Spicer universal joints are provided on the propeller shaft with slip joint to allow for spring action. Drive is obtained through rear springs with spring saddle, solid on rear axle, no radius rods being used.

Final drive is through a special Timken-Detroit special taxicab axle of the semi-floating type. The front axle, which is of the same make, is of the conventional I-beam section, equipped with Timken roller bearings throughout.

The equipment includes the following: Two cowl lights, searchlight, tail light, dome light, large lighting battery, electric horn, tire carrier, jack, jack handle, hub cap, wrenches, rim and port plug wrench.

### Mandt Automatic Dump Body

While the automatic dump body built by the Mandt Co., Keokuk, Iowa, is especially adaptable to road building work, it is equally utilitarian in the service of contractors, counties, material and fuel dealers, factories and farmers.

It is constructed entirely of hot riveted heavy blue annealed steel plates, steel castings and forgings. All the rivet heads in the bottom are countersunk, which together with the 60 degree discharging angle and flare at the dumping end, permit fast and clean dumping of heavy dry or wet aggregate or other materials.

Several features have been incorporated in this gravity dump body. Two powerful hooks working from the same shaft and properly placed with massive springs hold the body securely in place and assure prevention of accidental discharge. Another practical construction is the provision of steel gravity rollers, which have a double action. This construction permits a discharge to commence fast and then gradually slow up until the full dumping angle is attained without jar to the truck or springs. The balance of the body is such that a push will start it rolling back and a final quick lift, when within a few inches of its normal plane, snap it securely in place. An exclusive feature is stated to be the "safety arms," which are claimed to hold the body in perfect alignment whether dumping or riding, prevent over-running of body in dumping and body from jumping when negotiating rough roads with an empty body. An automatic end gate is standard with the body.

Extra equipment includes: division plates for charging pavers, spreader chain for gravel spreading, and steel top boards.

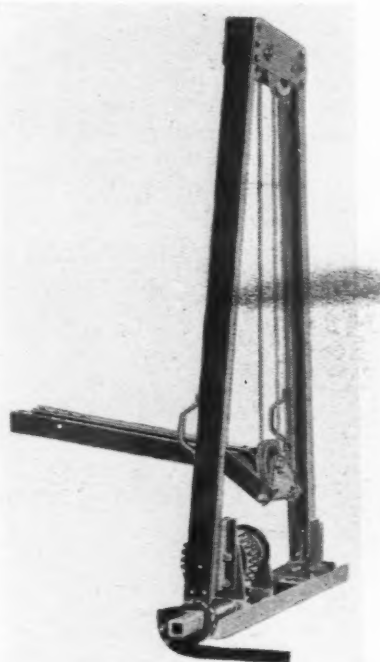
The following is a brief outline of specifications:

The body is 66 in. long, 47 in. wide at the discharge end, 16 in. deep, and weighs 497 lb. The sub frame, which is of 4-in.

steel channel, crucible steel castings, is 8 in. high, 45 in. long and 23 in. wide. Capacity of body is one yard full and 35 ft. heaped.

### Three and a Half Ton Rock Hand Hoist

The Rock hand hoist, applicable to any truck, is stated, by the manufacturers, the Rock Manufacturing Co., Waterloo, N. Y., to effectively handle any load up to 3½ tons and dump a load in approximately one minute. Drilling of holes in the frame to attach hoist is unnecessary, and as no part of the hoist extends below the frame between the side rails no interference is encountered with brake rods, cross members, etc.



Showing the Rock Hand Hoist Complete

Total space required for the hoist between the body and the driver's cab is 9 in. The weight of the hoist is 225 lb. and the body hinge and guides, 45 lb. A hinge for the body is furnished with the hoist as well as guides for the front end of the body. The price complete is \$85.

### All-Purpose Yule Steel Body and Hoist

The Yule steel body, built by the Way Products Co., Lansing, Mich., was designed to meet the demand for an economical general purpose body and provide a large range of service. Because of sectional construction, straight sides, double acting tail gate equipped with spreading device and extension steel side boards it may be used as a dumping unit or as an express or stake body for boxes, lumber, bar iron, etc. It is built of quality materials, properly placed.

Both the Yule hoist and steel body are particularly adapted for use in connection with Reo Speed Wagons and Republic Speed Trucks on which they are mounted before leaving the factory, if desired. They are, however, sold as a complete unit or separately.

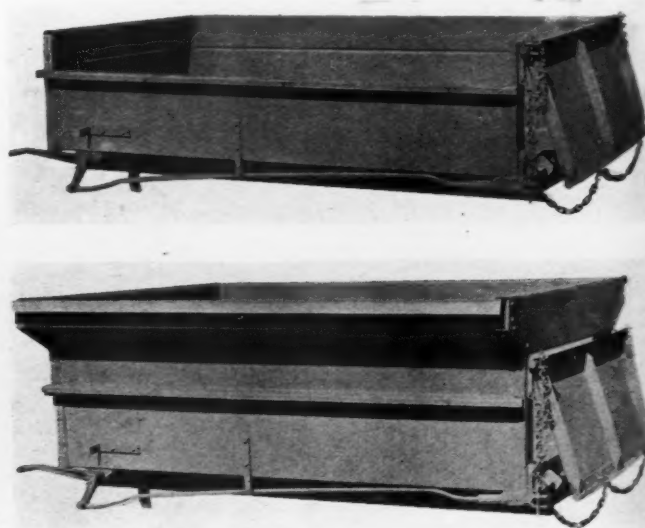
The Yule hoist is an effective and practical hand hoist. It is described as positive, rapid and easy to operate. A capacity load may be dumped in a moment and the body returned to position by gravity without jar. When mounted it requires but 12 in. back of driver's seat; it is no higher than the standard cab and weighs 295 lb. It fits any chassis and may be mounted easily and quickly without drilling a hole. All gears are concealed and there are no parts to break or get out of order.

This hoist elevates the body to an angle of fifty degrees. By means of a ratchet the body is always under control and may be held at any desired angle. The load can be spread or dumped in one place.

The load is lifted by means of two cables, either of which is strong enough to carry it. Danger of dropping the body because of a broken cable is thus reduced.



Mandt Low-Charging, All-Purpose Dump Body  
Special features are: A, steel hooks; B, safety arms; and C, gravity rollers



Models 012 and 012-E1 Way Dump Bodies, Specially Designed for Reos and Republics



## New Collier Speed Truck Consists of Standard Units

**R**ECENT reports from the Collier Motor Truck Co., Bellevue, Ohio, state that it is on the market with a new speed truck, which is essentially assembled from units standard to the trade. It is known as model 23, has a capacity of from  $\frac{3}{4}$  to  $1\frac{1}{2}$  tons, maximum speed of 40 m.p.h., and sells at \$1650 f.o.b. Bellevue, plus war tax.

The power plant is a Continental, four-cylinder engine, having a bore and stroke of  $4\frac{3}{4}$  in. and 5 in., respectively. Lubrication is by force feed and splash. Cooling liquid is circulated by pump through truck type cast tank radiator of 5-gal. capacity. The tanks are finned and the core is removable.

Gasoline is fed from a 15-gal. tank located under the front seat by a Stewart

provided, being of the internal expanding and external contracting types, respectively. All braking action is taken by 16-in. drums mounted on the rear wheels. Steering is through a Ross worm and split nut type of truck gear, having an 18-in. steering wheel.

The flexible 5-in. channel special truck frame, reinforced by four cross members, is supported by four semi-elliptic vanadium steel springs, all of which are bronze bushed and lubricated by oil cups. They measure 36 in. x  $2\frac{3}{4}$  in., and consist of eight leaves in the front and 50 in. x 3 in. with 10 leaves in the rear.

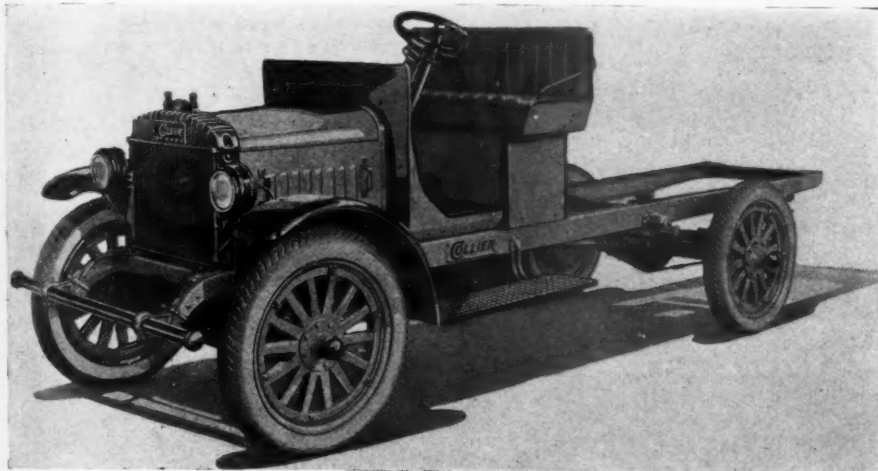
All four wheels are of the heavy wood artillery type, mounted on in front on roller bearings. The spokes are  $1\frac{3}{4}$  in. square and are fourteen in number. Pneu-

This system is usually operated with fleets of three or more trailers to each tractor. Small gasoline or electric tractors are used as locomotives. Trailers, it is pointed out, are as necessary as tractors, because of the restricted loading space of the latter, their greater value as hauling units, and the desirability of separate, convenient carrying units.

The Automotive Trailer Corp., Springfield, Ill., are manufacturing just such industrial trailers in one, two, three and five ton sizes. They are described as compact, rugged, low-wheel carriers and are constructed simply and strongly to withstand rough shop service. The simplicity of design permits the claim of continuous service, as there is practically nothing about them to get out of order. It is said that the well balanced and evenly weight distributed construction enables a train of these trailers not only to be easily pulled around, but permits even tracking as well. When not in use, the front end can be cut round entirely under the frame, thus taking up least possible space.

A brief review of the specifications reveals the following: A structural steel, angle type frame, hot-riveted throughout and rigidly braced at the corners; electric furnace steel castings; chrome vanadium, hammer-forged steel axles; heavy duty roller bearings; fifth wheel type steer with anti-friction floating bronze plate; tongue of angle steel with electric furnace cast steel eye; I-beam or H-beam steel frame supports; hardwood floor; rear tow hook of the class AA army type; and solid rubber pressed-on type or steel wheels.

The wheelbases of the first three models are 67 in., but the 5-ton model has a 71-in. wheelbase. The weights for all four models are respectively: 510, 720, 765 and 1560 lb.



This New Collier Speed Truck, Rated at 40 M.P.H., Sells at \$1650 f.o.b. Bellevue, Ohio

vacuum feed system to a Zenith carburetor having air control on the steering column. Greater volatility and correctness of gas mixture is assured because of a hot air connection through a flexible metal tube from the exhaust manifold. Ignition is through an Eisemann combination magneto and generator.

In unit with the engine is a multiple disk clutch, having a special lubrication cup for the thrust bearing and an extra heavy three-speed transmission. All the shafts of the gearset are mounted on New Departure ball bearings.

From the unit power plant the power is carried back through a Detroit tubular propeller shaft of nickel steel equipped with two Detroit universal joints. Final drive is through a spiral bevel,  $\frac{3}{4}$  floating type rear axle. This axle is claimed to possess the advantages of a full floating type of rear-axle in that the shafts can be easily removed for repairs, retaining at the same time lightness of load on the bearings and tubes when rounding curves. The final gear ratio is  $5\frac{3}{4}$  to 1.

The front axle is of the conventional I-beam section type, and is furnished with Timken taper roller bearings throughout.

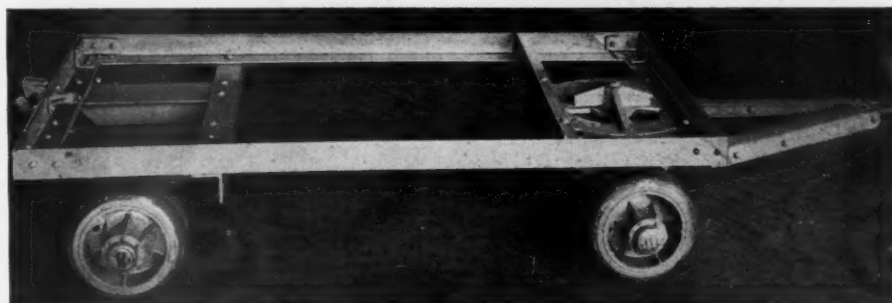
Both emergency and service brakes are

matic non-skid cord truck tires are used front and rear.

The electrical equipment consists of Bijur electric starter, Willard battery and headlight with dimmers. The standard equipment includes windshield, bumper, Klaxon electric horn, tool kit, air pump, jack and spare demountable rims.

### Automotive Industrial Trailer

Industrial tractor-and-trailer operation in inter-factory, yard, or warehouse work is claimed to exact economies known only to those who have a study of the subject.



Showing the Rugged, Structural Steel Construction of an Automotive Industrial Trailer

### About the April Service Number

The modernized version of service includes many factors which in former years were not considered of nearly as much importance as now. The April COMMERCIAL CAR JOURNAL will practically be a cinema of service in its every phase. Lack of realization of the importance of service has been the Waterloo of many a dealer. It should be the endeavor of every dealer to meet the needs of his customers in a prompt and efficient manner. This kind of service means everything to sales-building.

### Kearns Offers O. J. Childs Equipped Model

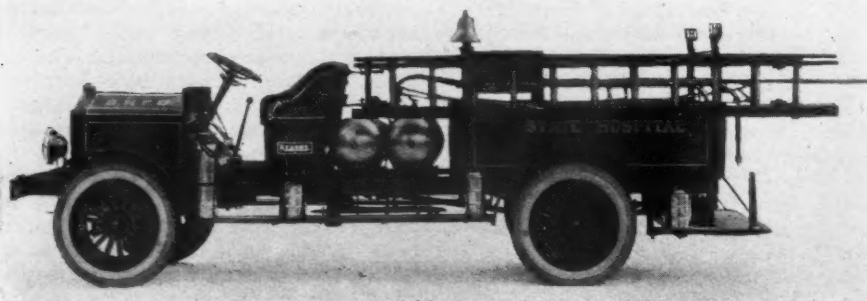
A modern motor driven double combination chemical and hose car apparatus makes up the fire fighting equipment now being offered with the Kearns Model N, 4000 lb. chassis.

The equipment, which consists of two 35-gal. chemical tanks, 1000-ft. capacity hose body, hand extinguishers, etc., is the product of the O. J. Childs Co., of Utica,

gallon and motive power about 15 per cent for the same motor and load.

Through the operation of the economizer the makers say in describing the working principle of this device, the liquid fuel is broken up into atoms that mix thoroughly with the air charge, thus making a gas which is highly volatile and which gives maximum explosive force when ignited.

This device, which is heated directly by the exhaust gases, so thoroughly breaks



Kearns Model N, Two-Ton Chassis Furnished With O. J. Childs One-Man Fire Equipment

N. Y., and is mounted and finished at the plant of the Kearns-Dughie Motors Corp., at Danville, Pa.

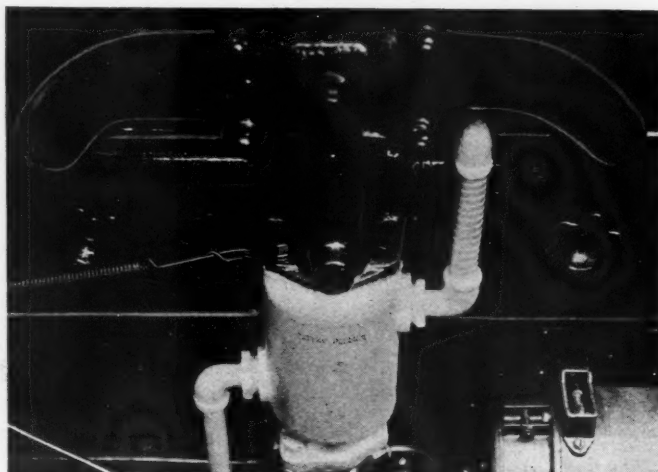
The chemical tanks can be operated by one man, and are efficient to extinguish the ordinary small fire at its inception. As one tank is discharged the other can be brought into play while the empty one is being recharged, thus insuring a continuous stream.

The chassis, powered with a Herschell-Spillman motor, is equipped with 36 x 6 cord tires, has a wheelbase of 136 in., and is capable of attaining a speed of 40 m.p.h.

This outfit, which is well balanced and efficient, is particularly adaptable for protecting small communities or institutions covering large acreage and many buildings.

### Gramm Pioneer Models to be Equipped With Economizers

Gramm Pioneer engineers recently introduced a new development, known as the Pioneer Fuel Economizer, for use on the Liberty truck engines of all the heavy duty models of the Gramm Pioneer line. This economizer is stated to increase truck mileage about 10 per cent to the



Showing Installation of the New Fuel Economizer Now Being Used on the Liberty Truck Engine of the Entire Gramm Pioneer Line

up the present-day heavy-gravity gasoline that much of the raw gasoline that formerly seeped into the crankcase is now completely volatilized, with resulting increased economy in oil consumption and longer life to the bearings as well.

### Highland Offers Combination Open and Closed Cab

Something new in cabs for trucks and speed-wagons has just been put on the market by the Highland Body Manufacturing Co., Cincinnati, O. It is in effect a combination open and closed cab—a closed cab which can readily be converted into a completely open cab.

The design of this cab, which is produced in two sizes, is such as to fit any truck on the market. The 54-in. wide size is a light cab for speed wagons of 1-ton trucks, and the other of 60-in. width is for all trucks of greater capacity. Both cabs are adjustable in length, and the tank compartment is adjustable to fit any tank.

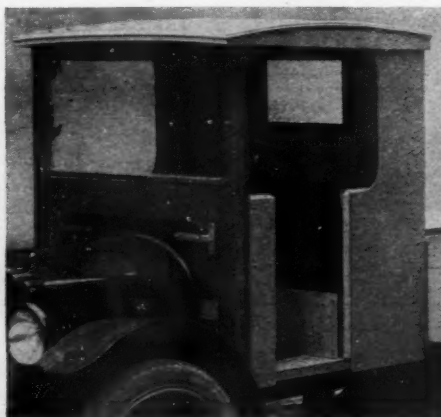
This new Highland sliding door cab is a universal cab, equipping the truck for use summer or winter, north or south, in congested traffic or the open country. When closed it not only affords protection against wintry elements, but offers the least possible obstruction to vision. When open it is as open as a regular open cab. The vision is not obstructed by door pillars or hinge pillars. The driver can get out or in at either side with ease.

In its construction the principle of using wood where wood is best and steel where steel is best has been followed.

All moving parts are under heavy spring control, which is claimed to prevent rattling and noise and take up wear as soon as it occurs. The doors slide into pockets and automatically lock, either open or closed. The windows slide and fold into the back of the cab and are locked

in all positions. The rear window drops into a well behind the lazy back. The windshield is one of the standard Highland type, full vision, and full ventilating.

All wood parts are of oak or ash. The wood pillars are straight.



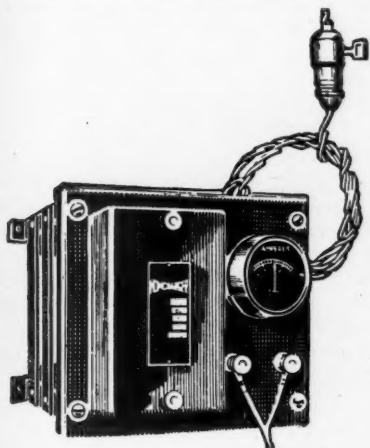
Showing the Highland Combination Open and Closed Cab in Three Stages of Conversion



# TRUCK EQUIPMENT AND APPLIANCES

## Automatic Electrical Company Introduces New Recharger

An ingenious and timely device, in view of increasing motor bus activity, has been perfected by the Automatic Electrical Devices Co., 120 W. Third St., Cincinnati, O., and is being marketed under the trade name of "Homcharger." It is a device for charging starting, lighting and ignition batteries. Small and neat, this charger, measuring  $5\frac{1}{2}$  in. x 7 in. x 7 in., was designed for mounting upon any wall. It is attached to the nearest alternating current lamp socket by means of an ordinary attaching plug. The standard Hom-



Known as the "Homcharger," This Device Will Charge Any Truck Battery

charger is claimed to fully charge an ordinary 6 or 12-volt battery over night, at a cost of but 4 or 5 cents for current.

As the charging rate automatically tapers as the battery becomes charged, no harm results if the battery should be left connected indefinitely. On the contrary, it is said that such overcharging tends to break down any sulphating which might exist on the battery plates, thereby lengthening its life.

The outfit consists of a step-down transformer and a simple rectifying "valve," which delivers a uni-directional current to the battery. An ammeter is furnished together with a 10 ft. charging cable and plug to facilitate connection to the battery.

In order to facilitate replacement of these contacts, which are the only wearing parts, they are removable as a unit with the armature by the loosening of two screws.

Should the alternating supply be interrupted while batteries are connected, the charger stops, but automatically re-starts as soon as power is restored. As soon as battery is disconnected from the charger, it automatically stops, thereby permitting the alternating supply to be left on over an indefinite period without any consumption of current.

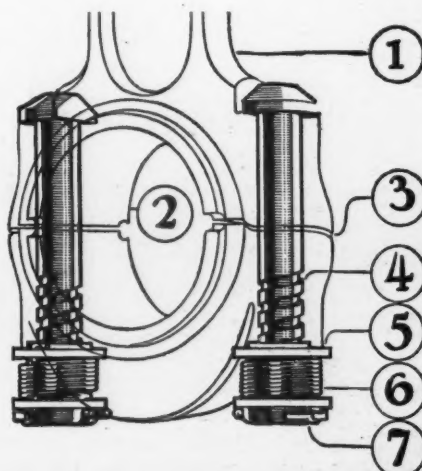
## Kil-Nock Automatic Bearing Adjusters

The Kil-Nock Co., Inc., Davenport, Iowa, is offering, through its sole distributors, the Ramsey Accessories Mfg. Co., 1513 N. Broadway, St. Louis, Mo., an automatic connecting rod bearing adjuster that is guaranteed to prevent knocks in the connecting rod bearings.

The construction of these automatic bolts is such as to automatically keep at the proper tension the two halves of the connecting rod bearing around the crankshaft. The only work entailed in their installation is removal of the ordinary  $\frac{3}{8}$ -in. bearing bolts and substitution of Kil-Nock bolts. The price for a set is \$5.

The following outline, together with the illustration, will show how this bolt works:

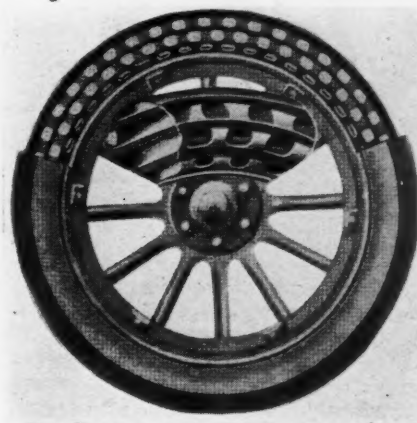
1. Connecting rod.
2. Wearable babbitt-lined bearing.
3. Shims required by ordinary bolts. The Kil-Nock bolt is claimed to automatically keep the lower bearing cap at proper tension around the crankshaft. Bushings or crankshaft can not wear out-of-round. The new bolt also automatically closes joint marked 3 only as slowly as the babbitt metal marked 2 wears down through use.
4. Cold rolled Bessemer carbon steel Kil-Nock bolt, showing the Acme box thread which lets the spool nut work upward easily.
5. This spool nut holds the two halves of the bearing together at proper tension.
6. Blue steel spring. This spring gently turns the spool nut upward only as slowly as "play" is developed through wearing down of the babbitt metal.
7. Castellated washer which holds the spring in place.



Phantom View Showing Installation of Kil-Nock Adjusters

## Taylor Inner Tires and Casings

The Taylor Rubber Co., Ltd., 37 Richmond St., East Toronto, Ontario, Canada, is manufacturing and marketing inner tires and casings that are claimed to provide unusual economy, in that they possess resilience and shock-absorbing qualities equal to air inflation without strain or undue flexing of the casing side walls. The inner tube, which takes the place of the conventional inner tube rounding out the tire as air pressure does, is said to exact its economy by reason of its principle of fabrication, which is sus-



Cutaway and Close-up of the Taylor Inner Tire

pended air. Suspended air is stated to do away with blowouts without sacrificing riding comfort.

As may be observed from the accompanying illustration, the Taylor inner tube consists of alternate layers of cushion gum, semi-hard rubber, fabric and cord, which suspend the air cells so arranged at regular intervals in the cushion rubber layer as to register against the cell walls of the adjoining cushion layer. The bands of gum, rubber, fabric and cord are said to be unstretchable but flexible, providing absorption and distribution of shock without double recoil.

Taylor inner tubes are procurable in sizes ranging from  $30 \times 3\frac{1}{2}$  to  $36 \times 4\frac{1}{2}$  at respective prices of from \$34.75 to \$60.35. Taylor standard casings are obtainable in the same sizes and range from \$17.25 to \$43 in price. These casings are designed to be used in conjunction with Taylor inner tubes and are guaranteed to 15,000 miles only if so used. They are offered in two types of treads with a slight difference in price.

Service and success go hand in hand. Read the April issue

### Lidseen Force Feed Oiler

A line of force feed oilers, comprising all styles and sizes, that can be caused to eject an even flow of oil from every conceivable position to otherwise inaccessible places and that can be used as a conventional oiler as well, is being manufactured and marketed by Gustave Lidseen, maker of oil-cans, dies, tools, machinery, metal stampings, etc., 830-840 South Central Ave., Chicago Ill.

The manner of forced emission is simple and effective and is accomplished by depressing a finger-trigger located at the base of the spout, which actuates a plunger located within the spout at the juncture of the spout to the can. Positive action is assured, as the slightest



pressure exerted at the trigger causes the plunger in the cylinder to force the oil up the spout. This design renders the ineffectual spring bottom oiler obsolete for purposes other than simple oiling operations. Two features of construction are the manner in which the spout is attached to the can; and a provision to prevent any possible leakage. It is attached by means of curved flanges and insured against leakage by a packing placed between the base of the spout and top of the can.

These cans, made of drawn steel, may be obtained in either copper-plated or gun-metal finish. They are made in all sizes, ranging from 1-3 of a pt. to 1 qt., with various spout lengths to cover almost any need.

### Dover Automatic Measuring Can

A gasoline pump testing device that will show at a glance the exact amount in cubic inches being delivered over or under correct volume by a pump was recently placed on the market by the Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge 39, Mass. It is pointed out that this can eliminates the use of the glass graduate in determining variance or error. The gage, which is located in the tube-like neck of the can, is calibrated in cubic inches with the zero mark, indicating the unit measuring point, located in the center. This gage is adjustable and removable and can be sealed when properly set.

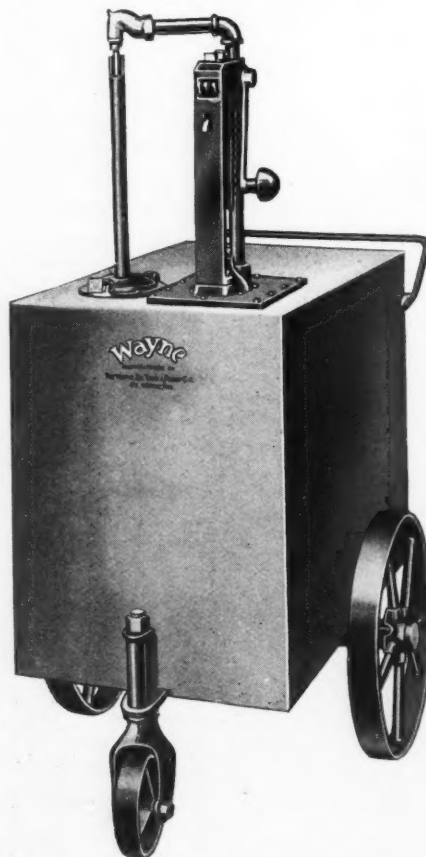
It is produced in sizes from one to five gal. and varies in height from 11½ in. to 24½ in., and in diameter from 8 in. to 10½ in.

### Wayne Portable Wheel Tank

The accompanying illustration is that of a portable wheel tank for the storage and distribution of lubricating oils and like liquids, and is recommended by the makers, the Wayne Oil Tank & Pump Co., Fort Wayne, Ind., as particularly serviceable in garages or at the curb for measuring and delivering small quantities of oil to trucks. It has a tank capacity of 65 gal. and is equipped with a self-measuring quart pump. A meter can be furnished, if desired, for keeping an accurate account of all oil delivered. The provision of an anti-drip nozzle permits of cleanliness, and the drip tube closing over the nozzle when the pump is not in use makes the equipment practically dust proof.

The tank is built of heavy gage steel, welded throughout. It is practically a solid container having no seams, consequently leak proof. The pump, which delivers one quart per stroke, also measures half-pints and pints by simply pushing the quantity stop to its proper position.

The axle is of steel, 1¼ in. in diam. It runs entirely under the tank, with machined bearings and steel hub cap. The height overall is 40 in.; width, 32 in.; and length, 46 in. The tank is finished in dark green enamel and the pump is japanned and nicked.

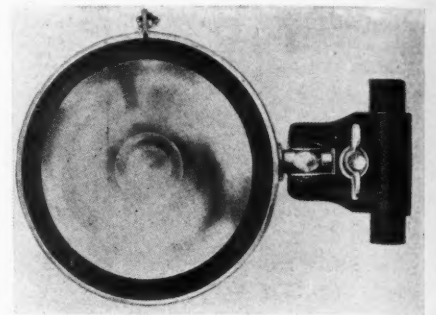


Wayne Portable Wheel Tank for the Storage and Distribution of Lubricating Oils

### Roffy Spot-Light

A high powered light having a mirror glass reflector of the return-ray type, claimed to minimize glare, is being offered by the Standard Corporation, Columbus, O.

Through a patented method by which crystal glass can be blown to precise geometrical curves, this concern is enabled to manufacture a glass reflector with integral cover at a cost that does not preclude its use in a spot-light. This reflector is said to be dust, moisture and age proof and to possess the lasting qualities and brilliancy of a chemically pure plate glass mirror. Through the application of the return-ray optical principle, the three



This New Spot-Light is Featured as a High-Powered Light, Having a Mirror Glass Reflector of the Return-Ray Type

lighting essentials, distance beam, broad general illumination and minimum glare are claimed to be obtained.

Another feature of the Roffy Spot-Light is a new development in a 360 degree ball and socket universal for a bracket that permits the aiming of the beam with ease in any direction inside or outside the truck. Although rigid and vibrationless when held in any particular position on the cab, it can be easily and quickly detached and carried to any part of the truck when necessary in trouble emergencies.

Briefly this lamp includes, besides the parts mentioned above: 27 c. p. frosted tip bulb; malleable steel handle; ball universal; brass bearings; cold rolled steel clamp; baked-on black enamel; nickel trimmings and 5 ft. of duplex cord. The price is \$5.

### Johns-Manville Folded and Stitched Brake Lining

Johns-Manville, Inc., Madison Ave. & 41st St., New York City, in offering its folded and stitched asbestos brake lining, which is made by special methods and from selected materials, states that it is most desirable for trucks. In it the company claims to have satisfactorily combined non-burn ability with longevity of material. It is interesting to note that these brake linings are used by the Fifth Ave. Bus Co., of New York City, which fact goes to show this brake lining's serviceability in heavy-duty service and ability to withstand the tremendous strains imposed on it.



## Herman Tire Chain and Link

The accompanying illustration shows the new tire chain now being produced in quantities by the Herman Mfg. Co., 1214 H. St., Washington, D. C. It is fitted with a patented device known as the little Giant Connecting Link, which may be hooked on or unhooked from a tire in a moment. This style of close twist chain circulates around the tire, permitting five positions of wear on the chain



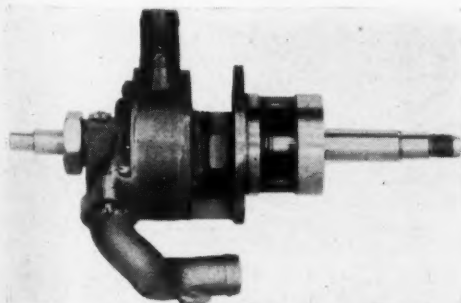
New Chain and Special Link Being Produced by the Herman Mfg. Co.

as well as on the connecting link. The link is stronger and more wearable than the chain, being drop-forged from 25 point carbon steel.

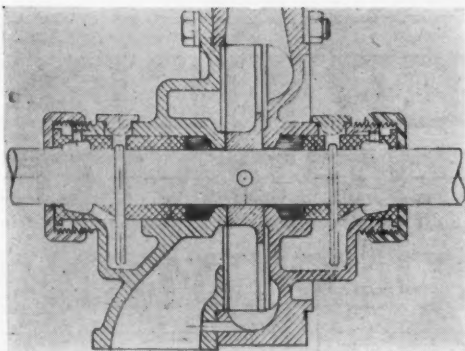
Three or four chain units is sufficient for one rear wheel. The price is \$1.50 for a 6-in. pneumatic tire unit to \$2 each for a 10-in. solid tire chain. To those desiring to make up their own chains by using only the patented connecting link, these links can be obtained at \$.30 each, and \$.40 each for the largest size, which is used in connection with 8/0 to 10/0 twist machine chain.

## New Arrow Water Circulating Pump

The Arrow Pump Co., with general offices in the Buhl Bldg., Detroit, Mich., has incorporated its ring oiled packing gland feature in a standardized design of water circulating pump. The pump proper is a standard unit, but special fittings



General View of the New Arrow Water Circulating Pump



Diagrammatic View of the Same Pump, Showing Constructional Features

for the inlet, outlet and mounting bracket are provided to suit different installations so that it may be applied quickly to any truck or tractor engine.

The cross section view shows in detail the construction of the packing gland with its ring oiling method of lubrication. This construction is claimed to prevent leaky glands, scored and pitted shafts and worn bearings.

With the packing between the hot water and the bearing, entrance of any hot water or other substance into the bearings is prevented. It also confines the lubricant to the bearings, shaft and packing, making it serve its purpose.

Use of a metallic non-abrasive type of packing eliminates entirely scored shafts and leaky glands and will last for years with infrequent adjustments.

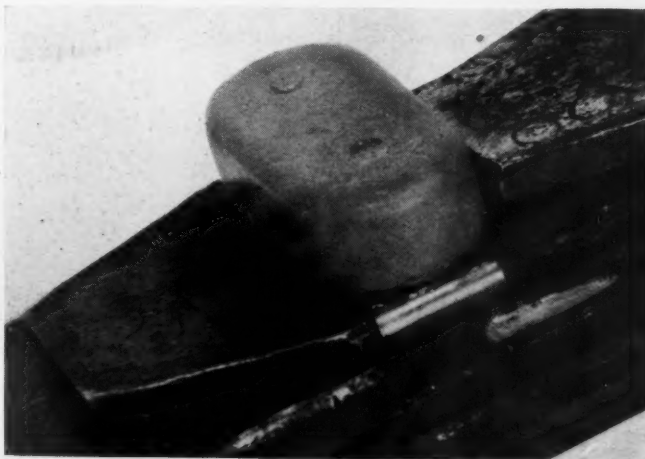
The packing gland in this construction is so arranged in combination with an adjustment nut and oil reservoir as to permit the use of the ring oiling principle of lubrication said to insure a constant and positive flow of oil.

## New Spring Lubricating Device

A new spring leaf lubrication system involving the use of soft metal bearings between the leaves of the spring is being marketed by the Center-Fed Spring Insert Sales Co., Wilkes-Barre, Pa. The system is described as simple in construction and application and effective in operation.

## Brownie Spring Oiler for Bus and Truck Service.

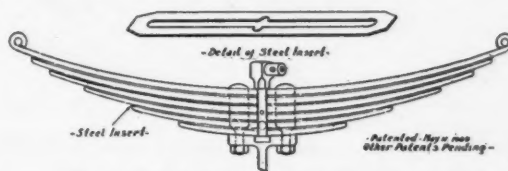
The illustration shows this device, manufactured by the Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, Ohio, attached complete. Simplicity in construction and effectiveness in performance are its main characteristics. This oiler is stated to automatically feed oil between spring leaves with uniform distribution while the vehicle is running. Five minutes' attention once a week is sufficient to maintain maximum performance.



Most of the prevailing spring troubles are said to be eliminated by this device.

When installing, the spring is removed from the truck and inserts of the soft metal bearing, twenty-five thousandths of an inch in thickness, are placed between each leaf. Where the springs have center bolts, the old bolt is replaced with a bolt provided with a nipple, through which oil is forced by a high pressure oil gun. The oil follows slots in the inserts and spreads out between every spring leaf. Where no center bolts exist, each leaf of the spring is drilled, and a nipple is placed at each end of the spring. The same lubricating results are obtained from this method of assembly.

A medium grade of engine oil is used. This method of spring oiling is claimed to take but ten minutes to complete the



Center-Fed Spring Inserts for Spring Lubrication

entire job, and lasts for more than 500 miles.

## Dixon's Spring Oil and Rust Solvent

The Jos. Dixon Crucible Co., Jersey City, N. J., recently introduced a spring oil and rust solvent known as Dixon's Graphited Spring Oil, which is not only stated to be effective but is easy to use. Squeaks are cured and rust formation prevented by simply applying the oil to the edges of the springs, from which point it creeps in between the leaves, carrying a charge of superfine flake graphite. Rust is automatically loosened and a coating of graphite plated where it will do the most good.

Graphited springs are claimed to absorb shocks and are quiet, and to prolong the life of tires and other parts by relieving strains. This graphited spring oil is also a solvent for rust; a few drops of the oil on rusted nuts or bolts, valve cages and tires will permit their easy removal.

Dixon's Graphited Spring Oil is put up in one pint red squirt cans.



## SERVICE AND REPAIR DEPARTMENTS



*What Are the Essentials of*

# HEAVY-DUTY TRUCK SERVICE?

**Fundamentally, Service is the Same for Trucks of All Capacities;  
But There Are Certain Definite Reasons Why Heavy-Duty Trucks  
Require the Greater Application of Common Sense in Servicing**

By C. P. SHATTUCK

**S**ERVICING the heavy-duty truck is conventional, but it is different in many respects. Engaged as are the greater number in heavy haulage, such as contracting, excavating, long distance hauling, etc., and very frequently overloaded, the strains and stresses equal and exceed those factors of safety incorporated by the manufacturer. The driver is also an important factor.

It is perfectly logical to assume that the heavy-duty truck should be serviced along the same lines as the lighter vehicle and so it should, provided the service is 100 per cent. But there is this difference: Owing to the greater investment, larger cost per day, fixed and variable charges, etc., it is more expensive to the owner for idle time. And when the truck is in the service station, or broken down on its job, the idle time factor is very active.

### When Service is Not Service

If the heavy-duty truck meets with an accident when on the road, and is carrying a cargo of material that must be delivered on time, and the dealer lacks the parts and organization to quickly place the truck in running condition in a reasonable length of time, then the owner is not receiving anything but **poor service**. And every hour the truck is delayed the costs are mounting. If the truck meets with an accident,

breaking a front axle, for example, and the dealer when notified of the accident has not an axle and is obliged to send some distance for one, then he is **not rendering service**.

If the magneto fails to function, due to neglect or tampering by the driver, and requires replacement of injured components, it is absurd for the dealer to expect the truck to remain idle until the magneto is removed, repaired and replaced, for the idle time factor will be costly. And other things may occur which will delay the truck. The trouble may be one that may only involve the element of labor or it may be one that will require a roadside repair and necessitate replacing the damaged part with a new one.

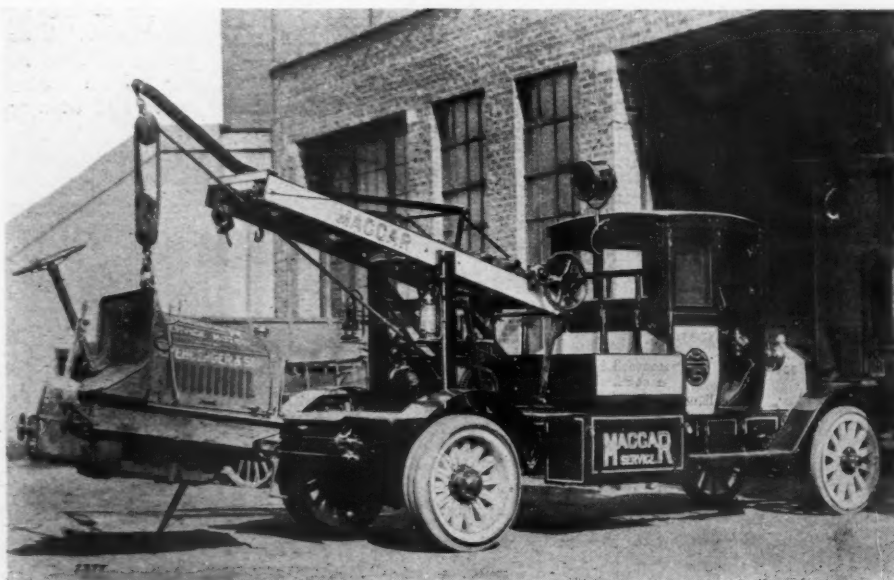
The older and more experienced dealers and distributors, particularly in the cities, know that the business man who invests heavily in motor highway transportation expects his interests to be safeguarded. Such dealers leave no stone unturned to render that type of service which satisfies.

### Service is Obligatory

The dealer selling a concern a heavy-duty truck is obligated to render satisfactory service. In the first place the average buyer of heavy-duty truck invariably disposes of a certain number of horses which the truck replaces. As a matter of fact many are sold on this basis. Now the buyer may know what horses will do. He can discount their illness, shoeing,

etc., for he knows about these factors. But when he buys a truck he does not, as a rule, know how long it will take to replace a broken axle, spring or other damaged part. He naturally expects that the dealer will be able to supply such parts promptly and install them quickly. In other words, he is likely to assume that a truck can be repaired in about the same ratio as shoeing and so forth, of the horse.

If the buyer has bought two big trucks and has disposed of his horses, and an accident occurs to one of the trucks, then his transportation



**Especially Built Repair Truck Employed by Rehberger & Son in Their Service Department. Equipment Such as This is Bound to Establish Confidence and Service Prestige**



equipment is decreased 50 per cent, as long as the truck is idle. And if the dealer says he will have to get the part from the factory and the usual delays ensue, then the owner not only loses money, but is not being properly educated on trucks. A concrete example is quoted: A dealer in a small New England town prevailed upon a quarry to purchase two 5-ton trucks and sell its horses. The trucks were employed to haul heavy granite blocks from the quarry to the railroad siding some seven miles distant, also to deliver granite within a radius of 50 miles. The road from the quarry to the railroad siding was one of grades and in bad shape, requiring careful handling of trucks.

### Building Sales Resistance

For several weeks the trucks functioned 100 per cent and the output was increased and time reduced which, of course, pleased the buyer and vindicated the dealer's claims. But one day a new, careless driver greatly overloaded the truck—result, a broken rear spring. The owner telephoned the dealer for a new spring, but the dealer didn't have one **but wrote to Boston** for the spring. By the time the spring was installed considerable time was lost and the quarry man was obliged to hire horses. Now it so happened that contracts had been made to make certain deliveries of granite and arrangements made for the railroad to shunt cars to the siding. With the trucks the schedule could have been maintained, but even by working one truck intensively, it, with the horses, could not deliver the granite.

The quarry man was very peeved and used some high explosive cuss words in describing the circumstances to the writer. This man was also sore because he was the first one in that quarry section to discard horses and use a truck and, as is the case in small places, his truck trouble was well discussed. Naturally, when he sought to hire horses he was more or less chaffed about his trucks. Although he stated to the writer that he was going back to horses, at last accounts he has not, for the factory has seen to it that the dealer carries standard parts and has had a heart-to-heart talk with the distributor on the subject.

### Who is Really at Fault?

The failure of the dealer to supply a spring and to render service, has handicapped the future of that make and other makes of trucks in that quarry country considerably. It will take a little time to counteract the bad impression made by the spring incident and in the meantime the trucks must perform 100 per cent. It may be argued, as it was by a factory representative to whom the writer related the incident, that it is difficult to educate the small dealer to the vital need of carrying parts and rendering service. Be that as it may, it would have been much cheaper for the factory not to have permitted its distributor to appoint a dealer, and in turn the dealer not to sell a prospect where such sales resistance was built up as it was in this instance. In other words, the factory was at fault because it permitted the distributor to appoint a

dealer **who could not render service.** And the distributor was at fault because he did not make such arrangement that would have avoided the long delay in getting the spring. When the truck sale was reported to the distributor and the conditions under which the trucks were operating made known, then it was up to both the factory and distributor to plan for **any possible contingency.** The dealer should have **telephoned for the spring that morning.** It could have been forwarded by messenger and placed in the truck the same day and the truck could have been in commission the next morning at the latest. But this wasn't done. Instead, the dealer wrote.

### Cannot Afford Parts

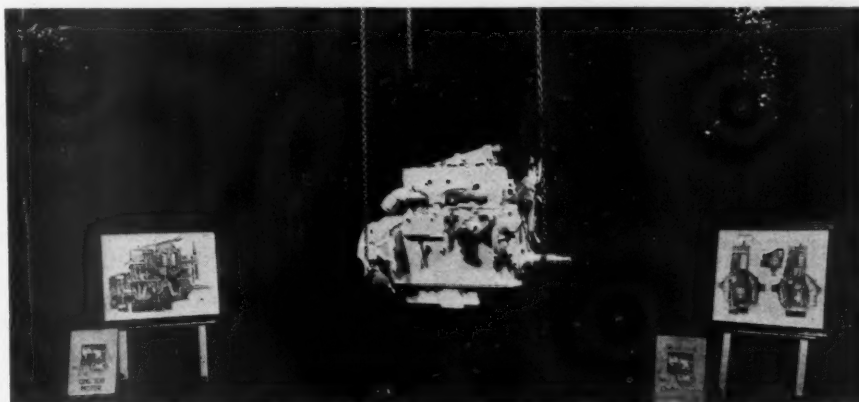
The writer is not in sympathy with the factory which permits the distributor to appoint dealers in small places as is generally done, and without pointing out to the dealer his duty to the buyer. In the merry scramble to sell trucks, for the distributor to sell his allotment, too many small dealers have been improperly sold, and when they sell, they run up against snags. Telling the small or sub-dealer he should carry parts, and even making out a list of quick moving parts, is not the key to the problem. The small dealer will not and cannot afford to stock parts for the heavy-duty truck as such parts run into real money. But the distributor can carry the parts and perfect such an arrangement as will enable the small

dealer to give fairly satisfactory service to his customers. There are certain quick moving parts which should be so located that a telephone call from the dealer to the supply station will result in quick action. With proper distribution of parts stations by the distributor there is no reason why the small dealer cannot render satisfactory service to his customers provided the distributor insists, and sees to it that the dealer **uses the quickest means.** In other words, more intensive effort should be made to sell the small dealer on servicing the truck than selling him an agency plus a demonstrating truck.

### But Parts Must be Stocked

These conditions will not apply generally to the cities where dealers usually carry stocks or have ready access to same, due to the fact that many units are standard and interchangeable. But in the smaller places, and particularly where motor highway transportation is in its infancy, where the good roads movement is starting, there is need of better parts and service methods. It may be done by consignment or establishing of parts stations.

Accidents will occur and parts will be required. With the knowledge that the factory possesses of its product, the data supplied through the orders for parts and that known by the character of the work the truck does, it should not be difficult for the factory to supply the dealer with concrete information as to his requirements in service and parts.



Here's an Idea of a Western Dealer Who Doesn't Under-Estimate the Value of Eye-Compelling Window Display

This holiday window of the Eldridge-Buick Sales Co., Seattle, Wash., shows a K-16 GMC engine encircled by a large wreath of holly and suspended from the ceiling by gold chains. Note effective use of photographs, showing cutaway views of the engine from which oil circulation can readily be traced.



This Clearly Shows the Universal Method of Hauling Practiced in the Oil Fields The arrangement permits of a maximum distortion without affecting the load, trailer, or truck. The truck is a heavy-duty Model RX Wichita and the load is an 18,000 lb. boiler

## Service Station and Repair Shop Appliances

### Special Piston Vise

For facilitating the placing of a connecting rod in the piston, replacing wrist pin bushing and reaming, taking off and replacing rings, etc., the vise offered by the Carswell-Hammond Mfg. Co., Boone, Iowa, is especially adapted. It is a device



Piston Vise With Interchangeable Jaws

that makes these ordinarily troublesome jobs easy for the mechanic, as it holds the piston securely and greatly minimizes any chance of doing damage when making these changes.

The reliable construction characteristic of this concern's products is in evidence in this recent addition to their line.

Ford and Fordson size jaws are furnished with each vise, and other sizes can be furnished at a small additional cost. Shipping weight, 25 lb. Price, \$15.

### New Canedy-Otto Products

Among the many products introduced by the Canedy-Otto Mfg. Co., Chicago Heights, Ill., at the recent show, are those shown in the accompanying illustrations.

At the left of Fig. A is to be seen the Canedy-Otto Universal Connecting Rod and Piston Aligner with the test for the piston pin being made. This aligning device is furnished with one bushing or pin of any desired diameter and extra ones can be purchased.

The center illustration shows the No. 29 Sensitive Bench Drill designed to meet the requirements of a powerful machine for light and rapid drilling. The spindle has a ball thrust bearing and chuck for

0 to  $\frac{3}{8}$ -in. capacity, straight shank drills. Power is transmitted from countershaft to cone pulleys by mitre gears.

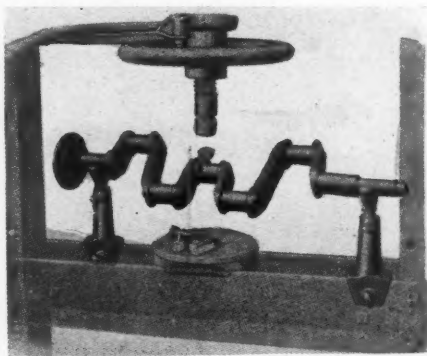
The illustration at the left shows the special Battery Drill No. SBD. This, the maker states, will accommodate any type of battery. It has a hand feed for quick operation and return of spindle and bores from 0 to  $1\frac{1}{4}$ -in. and drills to a center of  $14\frac{3}{4}$ -in. circle.

Probably the most interesting item at the booth of this company was the new Universal Engine Stand, shown in Fig. B. The maker states it meets every requirement in disassembling and assembling of any engine. The sliding heads have in and out, up and down, and round and round adjustment, and these, coupled with the two in and out adjustments of the main head and base, make it very flexible. It also has a handy tool tray.

### Weaver Truing Fixtures

A new Weaver product, shown for the first time at the A. E. A. show by the Weaver Mfg. Co., Springfield, Ill., is a new straightening attachment designed for use with the Weaver Forcing Press for such work as straightening shafts, axles, studs, etc.

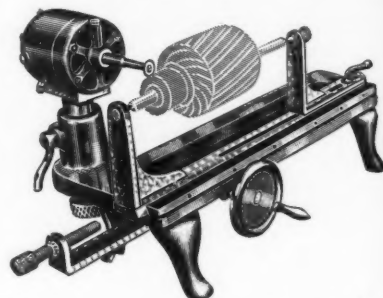
It will accommodate various-sized pieces. The height is adjustable. The V-blocks are made of steel with the inner surface machined.



Crankshaft Set for Truing

### New Wizard Undercutter

The latest model of Paul G. Niehoff & Co., Inc., 232 E. Ohio St., Chicago, is the Niehoff Wizard Undercutter. The new improvements to be found in this model are an automatic stop and a hand wheel to facilitate the moving of the armature



Showing Armature Mounted and Under Operation

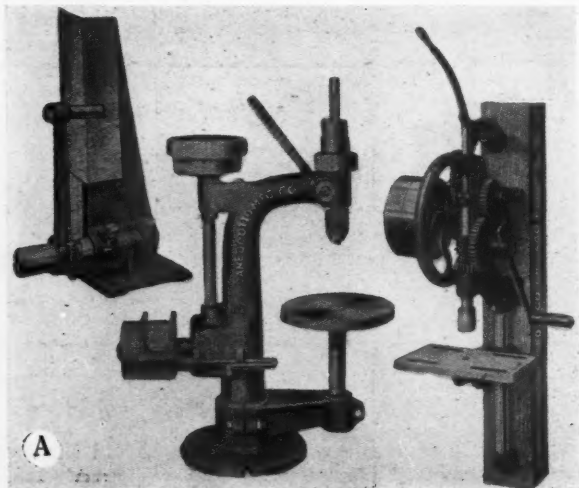
back and forth in the process of cutting and new adjustments. Cutting saws instead of burrs are now used.

This instrument can be securely bolted to the bench. The motor will operate on either alternating or direct current.

### Onan Lathe and Mica Undercutter

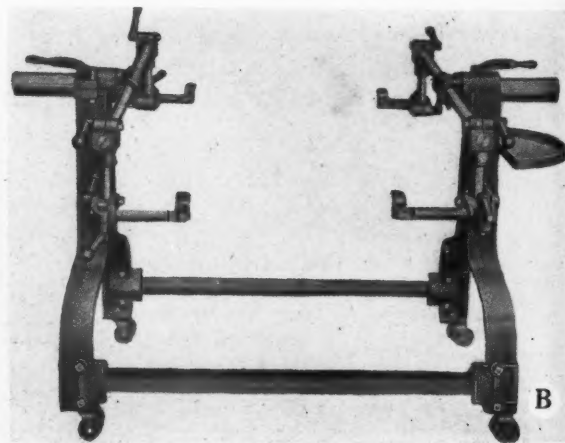
A combination unit, making it possible to true up and turn the commutator of any starter or generator armature in the same manner as with the large engine lathe, and, without removing the armature from the lathe, to undercut the mica between the bars in a workmanlike manner in a comparatively short time, is being offered by David W. Onan, 43 Royalston Ave., Minneapolis, Minn., manufacturer of automotive devices.

The turning-tool of this machine is controlled by a hand-wheel screw-feed, and the carriage is operated lengthwise by a drop-forged handle having suitable adjustment for every commutator. The undercut is described as straight and uniform. The lathe is built with a 7-in. swing and 22-in. bed, and is furnished with two Armstrong high-speed tool-bits, lathe dog, necessary wrenches and other equipment

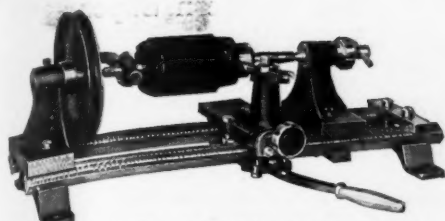


### New Products of the Canedy-Otto Mfg. Co.

Fig. A Shows an aligner, bench drill and battery drill. Fig. B illustrates the Universal engine stand.





**Onan Lathe and Mica Undercutter**

to make it complete for operating. Power for the machine's operation may be obtained from any available source or from an Onan testing device.

Each lathe packed for shipment weighs 35 lb. The price is \$38.

### Red Devil Quick-Lift Jack

A quick-lift jack which is well adapted in construction and serviceability for use in the tire shop or where a tire change is to be made was recently put on the market by the Mid-West Mfg. Co., Minneapolis, Minn.

**Red Devil Quick-Lift Jack Raised Into Position**

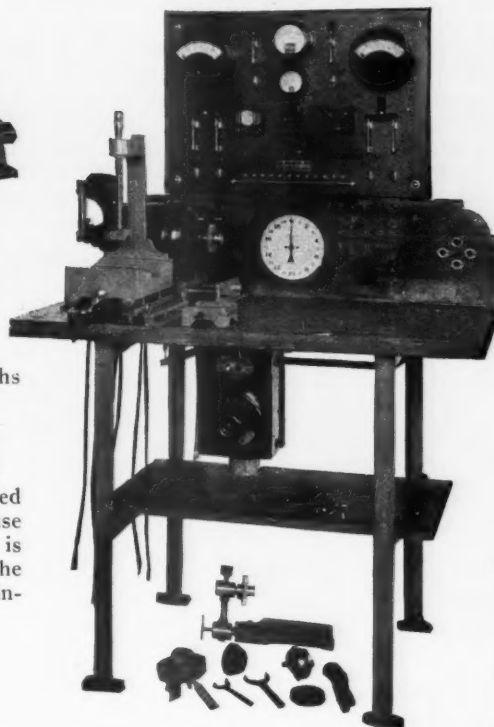
This jack will raise any vehicle 7 in. with four quick, easy strokes. The handle is 44-in. long and the jack is mounted on wheels to facilitate rolling into position. Jack is 8½ in. high and is built of steel.

### Universal Test Bench

Joseph Weidenhoff, 4352 W. Roosevelt Road, Chicago, Ill., is offering a test bench that combines in one unit everything required to test all makes of starters, generators, magnetos, distributors, induction coils, condensers and spark plugs.

The motor is of own design, and when used on alternating current, set speeds are obtained through a step-down transformer. For direct current a series resistance is substituted.

A universal driving chuck clamps on any shaft from ½ to 1 1/32 in. diameter and holding a vise provides a three-point

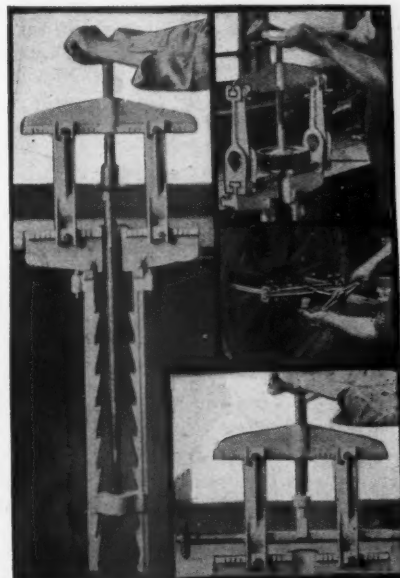
**Showing the Universal Test Bench Complete**

support. Included as equipment is a torque testing device, registering in pounds feet on a dial, and a female coupling for driving Delco and other units without shaft extension, and generators with gears mounted on end of shaft, without removing the gear.

### Combination Press and Puller

The accompanying illustration shows a few views of the various uses to which the new combination press and puller, recently introduced by George W. Dover, Inc., Thurber Ave. and Eddy St., Providence, R. I., can be put in the repair work of either service station or repair shop.

It is a powerful universal tool for quickly removing wheels, cams, collars, fly-

**Combination Press and Puller**

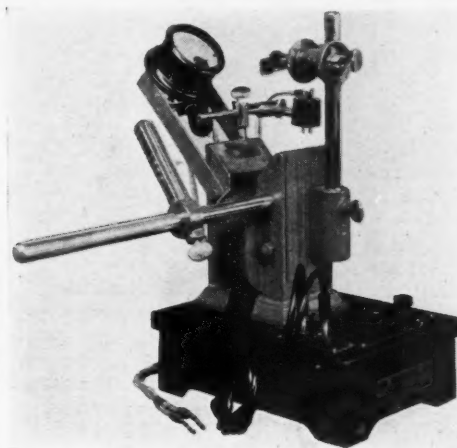
wheels, sprockets and gears of every description. As an arbor press it also facilitates removing and pressing in bushings, gears, pipe bending, shaft straightening.

High grade material is employed in its construction.

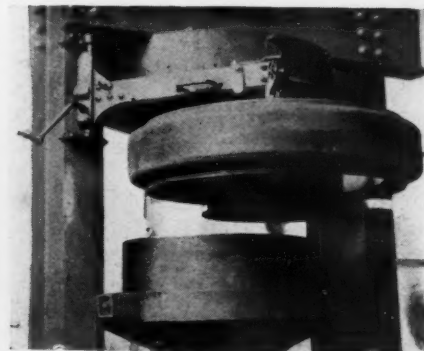
The illustration shows this universal tool in position for the following services: Left: base attachment for pressing gears on long shafts. Upper right: arbor press application. Center: cross beam removed and used for pulling wheel. Lower right: view of tool for shaft straightening application.

### Weidenhoff Fault-Finder

A new product which was introduced by Joseph Weidenhoff, 4352 W. Roosevelt Road, Chicago, at the recent A. E. A. show, is an armature tester, known as the Weidenhoff Armature Fault-Finder. This

**Weidenhoff Armature Tester and Fault-Finder**

armature tester is designed to eliminate guess-work and time-loss in armature testing and repairing and is equally adaptable to motor or generator armatures. It is stated to locate a defective coil or commutator bar, grounded or open coils, short circuited or reversed coils, and a short circuit between coils, and any grounds or loose connections.

**New Tire Press Hoist**

This new device recently patented by John Konetsky, 1644 Howard St., San Francisco, enables one man to place on and remove from a tire press, even the heaviest of tires. Speed is obtained by reason of the fact that it accurately centers the tire or wheel on the platen of the press. And another feature is that the tire is centered on the wheel before it is swung into the press. This device also saves the movement of the press platen by avoiding the lowering of the slow-acting plunger to the bottom of travel.

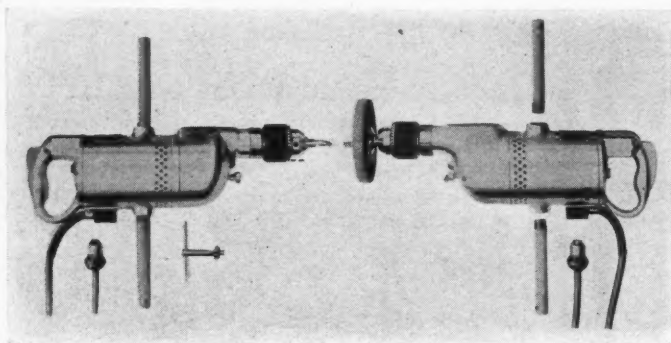
## Wodack Electrical Combination Machine

The Wodack Electric Tool Corp., Chicago, Ill., is marketing a combination portable electric drilling and grinding tool, with a motor giving a suitable high speed for grinding and a suitable slow speed for drilling.

This tool can be employed for drilling in wood as well as steel. It has a drilling capacity in steel of  $\frac{1}{8}$  to  $\frac{5}{8}$  in. As a

as a drill press for drilling metal or wood within the limits mentioned above, as well.

The B. & D. Portable Electric Drill can be detached from the stand and taken to the job. The complete outfit consists of the battery drill stand, as illustrated, with one standard B. & D.  $\frac{3}{8}$ -in. portable electric drill and two special lead boring bits,  $\frac{5}{8}$  in. and  $\frac{3}{4}$  in. in diam., with  $\frac{3}{8}$  in. shank to fit chuck on the  $\frac{3}{8}$  in. drill. The price, complete, is \$135, f.o.b. Baltimore, Md.



Two Views of the Same Tool Showing the Drilling and Grinding Attachments Assembled, Respectively

This tool is portable and electric and is being marketed by the Wodack Electric Tool Corporation.

grinder, it carries a 6 x  $\frac{3}{4}$ -in. wheel. The complete weight of the tool is but 18 lb.

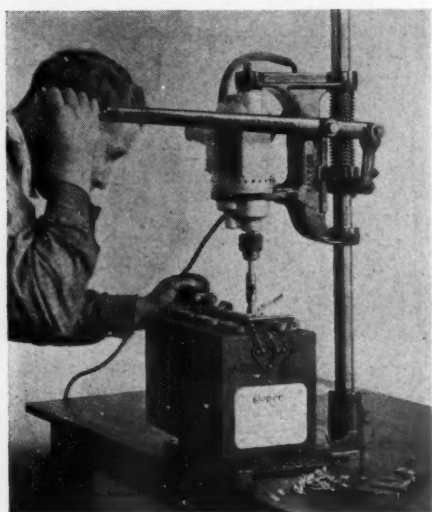
The motor develops  $\frac{1}{2}$  hp. under load and is of the universal type, operating on either direct or alternating current. Complete control of the tool is assured at all times by reason of a quick-make-and-break automatic-stop switch provided in the handle. Aluminum castings and ball bearings are used throughout.

Speed change as well as the operation of changing the grinding wheel attachment in place of the drill bit is said to be simple.

## B. & D. Battery Drill Stand

The Black & Decker Mfg. Co., Towson Heights, Baltimore, Md., is offering a new outfit designed for drilling out terminals in storage batteries.

This drill may be operated from alternating or direct current and has a capacity of  $\frac{3}{4}$  in. in lead,  $\frac{3}{8}$  in. in steel and 9-16 in. in hardwood. Although it is intended primarily for battery work, it can be used

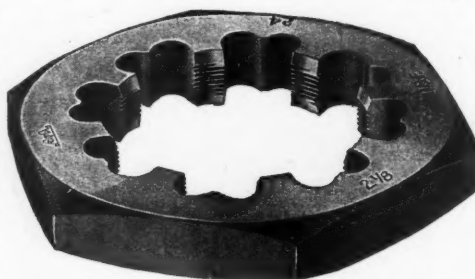


Black & Decker Battery Drill Stand

## New Ford Repair Tool

A new tool of considerable interest to Ford sales and service stations and to general repair shops which have occasion to work on Ford cars is the special GTD "Hex" die shown herewith.

This hexagon re-threading die is manufactured by the Greenfield Tap and Die Corp., Greenfield, Mass. Its size is  $2\frac{1}{8}$



GTD Hex Die for Rechasing Ford Hub Threads

in. diam., 24 threads per inch, and it is made expressly for rechasing the threads on Ford hubs. It will be welcomed by repair men familiar with the trouble and delay caused by battered threads on hubs, either as the result of the owner's running into steps, telegraph poles, etc., or crossed threads due to careless assembly.

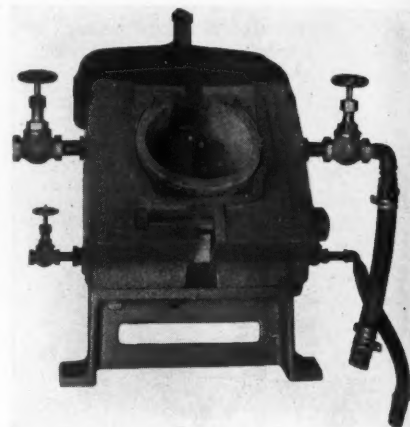
## West Light-Weight Steel Wheels

The West Steel Casting Co., 805-851 East 70th St., Cleveland, O., is now putting on the market a new design cast steel wheel for the  $\frac{3}{4}$ -ton speed truck that weighs only 150 lb. for the set of four wheels, exclusive of the tire rims.

These wheels, which have hub cast integral with wheel, are claimed to be as resilient as any wheel on the market, to give increased tire mileage, dissipate the heat generated by rapidly moving tires, and can be enameled and baked. They are obtainable at a popular price.

## New Western Super Vulcanizer

The Western Super Vulcanizer offered by the Western Rubber Mold Co., Chicago, Ill., is an expansible mold that can be accurately adjusted to fit any size tire. It is claimed to eliminate all disadvantages experienced in curing a tire in a mold that is either too large or too small for it. Also, being adjustable laterally as well as perpendicularly, difficulty



This Vulcanizer is Adjustable to Any Size Tire Ranging From 3 to  $5\frac{1}{2}$  in.

of getting the tire in and out of the mold is avoided.

"Bucking" of fabric, "pinching" or "cramping" the sectional repair are stated to be experiences not encountered in this new mold. The construction is such that it can be quickly adjusted to any size tire manufactured from 3 in. to  $5\frac{1}{2}$  in. This concern is also introducing a combination 7-8 in. and 9 in. adjustable mold for truck tires.

This outfit is peculiarly adapted to the shop where the daily production varies to all sizes of tires irregularly, since the cavity can be adjusted to any size tire, and consequently can be kept in continuous operation regardless of the sizes of tires to be cured.

The mold is designed in split halves, both in single and double units. The halves are held together by adjustable bolts, and variable thickness spacers of heat conducting metal are inserted between the halves to obtain the correct width for the size tire to be cured.

Steam is transmitted from the stationary half of the mold to the adjustable half through a sliding gland with packed stuffing boxes. This gland acts in the same manner as a piston, consequently any adjustment can be made without shutting off or losing steam.

The bead plates are adjusted in the same manner as the mold cavity. All parts are perfectly machined, finished and polished and the exterior highly finished in Royal Blue enamel.

## Readers, Notice!

Make a mental note to survey the April Service Number thoroughly. It will be helpful.



# Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line

Fan Belt Type: V—V-Shape, F—Flat, R—Round

Name, Model and Tonnage	ENGINE										BRAKE LINING								FRAME			
	Piston Rings		Carburetor		Upper Hose		Lower Hose		Fan Belt		Service				Emergency				Length	Width		
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Acason R-1—1920.	4	1 1/4	1	1 1/4									11 1/4	3	3/4	2	11 1/4	3	3/4	2	112	34
Acason RB-1 1/2—1920.	4	1 1/4	1	1 1/4									11 1/4	3	3/4	2	11 1/4	3	3/4	2	112	34
Acason H-2 1/2—1920.	3	1 1/4	1	1 1/4									13 1/4	3	3/4	2	13 1/4	3	3/4	2	130	35
Acason L-3 1/2—1920.	3	1 1/4	1	1 1/4									16	3	3/4	2	16	3	3/4	2	163 1/4	35
Acason M-5—1920.	3	1 1/4	1	1 1/4									18	4	1	2	18	4	1	2	167 1/4	35
Acce, Series A 1 1/2—1920.	3	1 1/4	1	1 1/4	H	10 3/4	2 1/4	6 1/4	2	37 1/2	1	F	12	3 1/4	3 1/4	4	12	3 1/4	3 1/4	4	122 1/2	32
Acce, Series A 2 1/2—1919-20.	4	1 1/4	1	1 1/4	V	10 3/4	2 1/4	5 1/4	1 1/4	33	1 1/4	V	12	3 1/4	3 1/4	4	13	3 1/4	3 1/4	4	144 1/2	32
Acme G-3 1/2.	3	1 1/4	1	1 1/4	H	11	2	11	2	38 1/4	1 1/4	F	12	3 1/4	3 1/4	4	10 1/2	3 1/4	3 1/4	4	110 3/4	34
Acme B-1—1916-20.	3	1 1/4	1	1 1/4	V	11	2	11	2	38 1/4	1 1/4	V	12	3 1/4	3 1/4	4	12	3 1/4	3 1/4	4	110 3/4	34
Acme F-1 1/2—1919-20.	4	1 1/4	1	1 1/4	H	8	1 1/4	11 1/2	1 1/4	40	1 1/4	V	12	3 1/4	3 1/4	4	12	3 1/4	3 1/4	4	123 1/2	34
Acme A-2 1/2—1916-20.	4	1 1/4	1 1/4	1 1/4	H	7	1 1/4	11	1 1/4	33 1/4	1 1/4	V	13	3 1/4	3 1/4	4	13	3 1/4	3 1/4	4	135	34
Acme AC-2 1/2—1921.	4	1 1/4	1 1/4	1 1/4	H	10	1 1/4	13	1 1/4	33 1/4	1 1/4	V	13	3 1/4	3 1/4	4	13	3 1/4	3 1/4	4	140 1/4	34
Acme C-3 1/2—1917-20.	4	1 1/4	1 1/4	1 1/4	H	11 1/2	1 1/4	13	1 1/4	33 1/4	1 1/4	V	15 1/2	3 1/4	3 1/4	4	15 1/2	3 1/4	3 1/4	4	150 1/4	36
Acme E-5—1919-20.	3	1 1/4	1 1/4	1 1/4	H	11	2	11 1/2	2	40 1/2	2	F	18	4	1	4	18	4	1	4	159 1/4	37
Akron Multi-Truck 20-1 1/2.	4	1 1/4	1 1/4	1 1/4	V	9	1 1/4	7 1/4	1 1/4	36 1/4	2 1/4	F	19 1/2	1 1/4	1	4	19 1/2	1 1/4	1	4	102	34
American 25-2 1/2.	4	1 1/4	1 1/4	1 1/4	V	19	1 1/4	17	1 1/4	38	2 1/4	F	19	2 1/4	1	4	19	2 1/4	1	4	142	33
American 40-4.	4	1 1/4	1 1/4	1 1/4	V	19	1 1/4	9 1/2	1 1/4	38	2 1/4	F	57	2 1/4	2	2	41 1/2	2 1/4	2	2	142	37
American 50-5.	4	1 1/4	1 1/4	1 1/4	V	19	1 1/4	9 1/2	1 1/4	38	2 1/4	F									158	37
Apex C-1.	3	1 1/4	1	1	V	7 1/4	2	12	2	36 1/4	2	F	42	2	2	2	41 1/2	2	2	2	102	35 1/4
Apex D-1 1/2.	3	1 1/4	1	1	V	7 1/4	2	12	2	36 1/4	2	F	42	2	2	2	41 1/2	2	2	2	102	35 1/4
Apex E-2 1/2.	4	1 1/4	1	1 1/4	V	7 1/2	1 1/4	8	2	32	1 1/4	F	54	2 1/4	2	2	53 1/4	2 1/4	2	2	128	31 1/4
Apex G.	3	1 1/4	1	1	V	12	2	15 1/4	2	34 1/4	1 1/4	F	42	2	2	2	41 1/2	2	2	2	102	35 1/4
Armleder 20.	4	1 1/4	1	1	V	12	1 1/4	16 1/4	1 1/4	31 1/4	2 1/4	F	11 1/4	3 1/4	1	4	11 1/4	3 1/4	1	4	104 1/4	32
Armleder KW-3 1/2—1916-21.	4	1 1/4	1 1/4	1 1/4	V	12	2	16 1/4	1 1/4	35 1/4	2 1/4	F	42	3	1	1	16	3 1/4	1	8	150	36
Armleder HW-2 1/2—1916-21.	4	1 1/4	1 1/4	1 1/4	V	9 1/2	1 1/4	11 1/4	1 1/4	35	2 1/4	F	13 1/4	3 1/4	1	4	13 1/4	3 1/4	1	4	140	32
Atco B-1 1/2.	4	1 1/4	1	1	V	11	2	11	1 1/4	31 1/4	2 1/4	F	25 1/4	2 1/4	2	2	18	2 1/4	2	2	109 1/4	32
Atco B1-1 1/2.	4	1 1/4	1	1	V	11	2	11	1 1/4	31 1/4	2 1/4	F	46	2 1/4	2	2	46	2 1/4	2	2	109 1/4	32
Atco A-2 1/2.	4	1 1/4	1 1/4	1 1/4	V	12	2	11	1 1/4	33 1/4	1 1/4	F	25 1/4	2 1/4	1	4	22	2 1/4	1	4	124 1/4	33
Atlas 21-1.	3	1 1/4	1 1/4	1 1/4	H	9	2	14 1/4	2 1/4	31 1/4	1 1/4	F	40	2 1/4	1	1	22 1/4	2 1/4	1	1	84 1/4	33 1/4
Atterbury 20R-1 1/2—1920.	4	1 1/4	1	1	V	8	1 1/4	14	1 1/4	38 1/4	1 1/4	F	11 1/4	3 1/4	1	4	11 1/4	3 1/4	1	4	122 1/4	34
Atterbury 7CX-2 1/2—1919-20.	3	1 1/4	1 1/4	1 1/4	V	5 1/4	1 1/4	6 3/4	1 1/4	30 1/4	1 1/4	F	13 1/4	3 1/4	1	4	13 1/4	3 1/4	1	4	133 1/4	34
Atterbury 7D-3 1/2—1917-20.	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	6	1 1/4	30 1/4	1 1/4	F	15 1/4	3 1/4	1	4	15 1/4	3 1/4	1	4	145 1/4	37 1/4
Atterbury 8E-5—1919-20.	3	1 1/4	1 1/4	1 1/4	V	14	2	20 1/4	2	40	2	F	17 1/4	4	1	4	17 1/4	4	1	4	157 1/4	37 1/4
Autocar XXI-F-2—1915-20.	4	1 1/4	1 1/4	1 1/4	V	3	1 1/4	4	1 1/4	48 1/4	1 1/4	F	16 1/4	2 1/4	2	2	13	2 1/4	2	2	91	34
Autocar XXI-G-2—1920.	4	1 1/4	1 1/4	1 1/4	V	3	1 1/4	4	1 1/4	48 1/4	1 1/4	F	25 1/4	2 1/4	2	2	13	2 1/4	2	2	114	34
Autocar XXVI-Y4—1920.	3	1 1/4	1 1/4	1 1/4	V	3 1/2	1 1/4	3	1 1/4	48 1/4	1 1/4	F	25 1/4	2 1/4	2	2	25 1/4	2 1/4	2	2	121	34 1/4
Autocar XXVI-B-4—1920.	3	1 1/4	1 1/4	1 1/4	V	3 1/2	1 1/4	3	1 1/4	48 1/4	1 1/4	F	25 1/4	2 1/4	2	2	25 1/4	2 1/4	2	2	176	34 1/4
Available H-1 1/2—1920.	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	14	1 1/4	40	2	F	48	2 1/4	2	2	36	2 1/4	2	2	120	32
Available H-2 1/2—1916-20.	3	1 1/4	1 1/4	1 1/4	V	11	1 1/4	14	1 1/4	40	2	F	13 1/4	3 1/4	1	4	13 1/4	3 1/4	1	4	144	32
Available H3—1916-20.	3	1 1/4	1 1/4	1 1/4	V	11	1 1/4	14	1 1/4	42	2	F	16	3	1	4	16	3	1	4	168	36
Available H5—1916-20.	3	1 1/4	1 1/4	1 1/4	V	12	2	16	2	40	2	F	18	4	1	4	18	4	1	4	168	38
Available H7—1919-20.	3	1 1/4	1 1/4	1 1/4	V	12	2	16	2	40	2	F	72	3 1/4	2	2	72	3 1/4	2	2	168	38
Available H2—1921.	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	14	1 1/4	40	2	F	48	2 1/4	1	4	36	2 1/4	1	4	120	32
Available H2 1/2—1921.	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	14	1 1/4	40	2	F	13 1/4	3 1/4	1	4	13 1/4	3 1/4	1	4	144	32
Available H3 1/2—1921.	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	14	1 1/4	42	2	F	16	3 1/4	1	4	16	3 1/4	1	4	168	36
Available H5—1921.	4	1 1/4	1 1/4	1 1/4	V	12	2	16	2	40	2	F	18	4	1	4	18	4	1	4	168	38
Available H7—1921.	4	1 1/4	1 1/4	1 1/4	V	12	2	16	2	40	2	F	72	3 1/4	2	2	72	3 1/4	2	2	168	38
Avery 1—1920.	3	1 1/4	1	1	V	10	2	6 1/2	2	31 1/4	1 1/4	F	19 1/4	2	1	4	18 1/4	2	1	4	85	34
Bell M1.	4	1 1/4	1	1	V	10	2	10	1 1/4	32	2	F	36	2 1/4	1	4	42	3	1	1	110	34
Bell E-1 1/2.	4	1 1/4	1	1	V	10	2	10	1 1/4	32	2	F	39	2 1/4	1	4	48	3	1	1	114	34
Bell O-2 1/2.	4	1 1/4	1	1	V	10	2	10	1 1/4	32	2	F	48	2 1/4	1	4	54	3	1	1	126	34
Belmont A-1.	4	1 1/4	1	1	V	10 1/2	2	12	1 1/4	34	2	F	32	2	2	2	31	1 1/2	2	2	78	34
Belmont B-1 1/2.	4	1 1/4	1 1/4	1 1/4	V	10 1/2	2	12	1 1/4	34	2	F	41	2	2	2	40	1 1/2	2	2	120	36
Belmont D-2 Ton.	4	1 1/4	1 1/4	1 1/4	V	10 1/2	2	12	1 1/4	34	2	F	51	3	2	2	46	2	2	2	119 3/4	34
Belmont F-3 Ton.	3	1 1/4	1 1/4	1 1/4	V	21	2	14 1/4	1 1/4	37	2	F									137 1/4</	

## Replacement Table—Continued

Name, Model and Tonnage	ENGINE										BRAKE LINING							FRAME				
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service			Emergency			Length	Width		
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Columbia H.	3	1	1	1	V	12	12	11	11	38	1 1/4	F	42	2 1/2	3	4	40 1/2	1 1/4	3	2	120	32 1/2
Commerce T-1500.	3	1	1	1	V	10	10	10	10	44	1 1/4	V	50	2 1/2	3	4	48 1/2	1 1/4	3	2	92 1/2	34
Commerce 12-3000.	3	1	1	1	V	10	10	10	10	44	1 1/4	V	45	2 1/2	3	4	43 1/2	1 1/4	3	2	99 1/2	34
Commerce 16-4000.	3	1	1	1	V	10	10	10	10	44	1 1/4	V	50 1/4	2 1/2	3	4	48 1/2	1 1/4	3	2	108 1/2	34
Commerce 18-5000.	3	1	1	1	V	6	11	11	11	33	1 1/4	V	50 3/4	2 1/2	3	4	48 1/2	1 1/4	3	2	128 1/2	34
Concord A-2-1921.	4	1 1/4	1 1/4	1 1/4	H	11	11	9 1/2	9 1/2	34	1 1/4	F	12	3 1/2	4	4	12	3 1/2	4	4	108 1/2	32 1/2
Concord A-X-2-1921.	4	1 1/4	1 1/4	1 1/4	H	11	11	9 1/2	9 1/2	34	1 1/4	F	12	3 1/2	4	4	12	3 1/2	4	4	122 1/2	32 1/2
Concord B-3-1921.	4	1 1/4	1 1/4	1 1/4	H	11	11	9 1/2	9 1/2	34	1 1/4	F	13 1/2	3 1/2	4	4	13 1/2	3 1/2	4	4	122 1/2	32 1/2
Concord B-X-3-1921.	4	1 1/4	1 1/4	1 1/4	H	11	11	9 1/2	9 1/2	34	1 1/4	F	13 1/2	3 1/2	4	4	13 1/2	3 1/2	4	4	155 1/2	32 1/2
Corbitt E-1-1917-20.	3	1	1	1	V	8	8	14	14	38	1 1/4	V	19	2	2	2	19	2	2	2	105	34
Corbitt D-1 1/2-1916-20.	3	1	1	1	V	8	8	14	14	38	1 1/4	V	45 1/4	2 1/2	1	1	45 1/4	2 1/2	1	1	120	34
Corbitt C-2-1915-20.	3	1	1	1	V	14	14	13	13	36	1 1/4	F	51 1/2	2 1/2	1	1	51 1/2	2 1/2	1	1	138	35
Corbitt B-2 1/2-1916-20.	3	1	1	1	V	14	14	13	13	36	1 1/4	F	51 1/2	2 1/2	1	1	51 1/2	2 1/2	1	1	138	35
Corbitt AA-5-1919-20.	3	1	1	1	V	13	13	8	8	36	1 1/4	V	69 1/4	3	3	3	69 1/4	3	3	3	160	38
Corbitt A-3 1/2-1917-20.	3	1	1	1	V	13	13	14	14	36	1 1/4	V	64	2 1/2	1	1	64	2 1/2	1	1	160	35
Cyclone A-3000.	3	1	1	1	V	16	16	16	16	32 1/2	1 1/4	F	21 1/4	2 1/2	4	4	19 1/4	2 1/2	4	4	113	34
Dart S-1 1/2-1920-21.	3	1	1	1	V	11	11	8	8	36	1 1/4	F	19	1 1/4	4	4	19	1 1/4	4	4	112	34
Dart M-2 1/2-1920-21.	3	1	1	1	H	11	11	14	14	35	1 1/4	F	10	2 1/2	2	2	19	3 1/2	4	4	124	34
Dart W-3 1/2-1920-21.	3	1 1/2	1 1/2	1 1/2	H	11	11	12	12	36	1 1/2	F	28	2 1/2	4	4	28	2 1/2	4	4	144	38
Day-Elder AS-1.	3	1	1	1	V	9	9	9 1/2	9 1/2	40	1 1/4	V	19	2	2	4	19	2	2	4	108	35
Day-Elder B-1 1/2.	3	1	1	1	V	9	9	9 1/2	9 1/2	40	1 1/4	V	19	2	2	4	19	2	2	4	120	35
Day-Elder D-2.	3	1	1	1	V	9	9	9 1/2	9 1/2	35	1 1/4	V	45	2	2	2	45	2	2	2	125	35
Day-Elder C-2 1/2.	3	1	1	1	V	10 1/2	12	12	12	36 1/4	1 1/4	V	52	2 1/2	2	2	52	2 1/2	2	2	123	35
Day-Elder F-3 1/2.	3	1	1	1	V	6 1/4	12	12	12	35 1/4	1 1/4	F	56 1/2	3	3	3	56 1/2	3	3	3	148	35
Day-Elder E-5.	3	1	1	1	V	12 1/2	10	10	10	38 1/2	1 1/2	F	69	3 1/2	2	2	69	3	2	2	155	37
Dearborn BW-2-1915-17-19-20.	3	1	1	1	V	8 1/4	8	8	8	37	1 1/4	F	18	2 1/2	2	2	18	1 1/2	2	2	130	32
Dearborn F-1 1/2-1915-17-19-20.	3	1	1	1	V	12	12	6	6	37	1 1/4	F	16 1/2	2 1/2	2	2	16 1/2	1 1/2	2	2	96 1/4	34
Dearborn C-1-1915-17-19-20.	3	1	1	1	V	12	12	6	6	37	1 1/4	F	38	2 1/2	1	1	38	2	1	1	107	32
Defiance B-1 1/2-1918-19-20.	3	1	1	1	V	10	8	8	8	40 1/4	1 1/4	F	45	2 1/2	1	1	43	2 1/4	1	1	116	34
Defiance C-2-1918-19-20.	3	1	1	1	V	10	8	8	8	40 1/4	1 1/4	F	54 1/4	2 1/2	1	1	52 1/2	2 1/4	1	1	116	34
Defiance D-1920-21.	3	1	1	1	V	10	8	8	8	40 1/4	1 1/4	F	45	2 1/2	1	1	43	2 1/4	1	1	120	34
Defiance E-1920-21.	3	1	1	1	V	10	8	8	8	40 1/4	1 1/4	F	54 1/4	2 1/2	1	1	52 1/2	2 1/4	1	1	120	34
Denby 31-3 1/2-1922.	3	1	1	1	V	6	2 1/2	19	19	32 1/2	1 1/4	V	49	2 1/2	2	2	47 1/2	2 1/4	2	2	97 1/2	34
Denby 33-1 1/2-1922.	3	1	1	1	V	9	2	12	12	41 1/4	1 1/4	V	8 1/2	4	4	4	46 1/2	1 1/2	2	2	120	33 1/4
Denby 34-1922.	3	1	1	1	V	9	2	12	12	41 1/4	1 1/4	V	53	3	3	3	50 1/2	2 1/2	2	2	127	34
Denby 35-2 1/2-1922.	3	1	1	1	V	9	2	12	12	32	1 1/4	F	56 1/4	3	3	3	47 1/2	2 1/2	2	2	143 1/4	33 1/4
Denby 27-4-1922.	3	1	1	1	V	13	13 1/4	16 1/4	11 1/2	32	1 1/4	F	8 1/2	4	4	4	58	2 1/4	2	2	140	34
Denby 210-5-1922.	3	1	1	1	V	13	16 1/4	16 1/4	11 1/2	32	1 1/4	F	8 1/2	4	4	4	89	2 1/4	2	2	140	34
Dependable Dispatch A-1 1921.	4	1	1	1	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/4	2 1/2	1	1	38 1/4	2 1/4	1	1	108	33 1/4
Dependable C-1 1/2-1920-21.	4	1	1	1	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/4	2 1/2	1	1	38 1/4	2 1/4	1	1	121	33
Dependable D-2 1920-21.	4	1	1	1	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	53 1/4	2 1/2	1	1	38 1/4	2 1/4	1	1	140	33
Dependable E-2 1/2-1920-21.	4	1	1	1	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	63	2 1/2	1	1	49	2 1/2	1	1	152	33
Dependable G-3 1/2 1921.	4	1	1	1	V	13	2	13	1 1/4	37 1/2	2	F	63	2 1/2	1	1	49	2 1/2	1	1	170	33
Diamond T-O-3-1.	3	1	1	1	V	9	1 1/4	6	1 1/4	35	2	F	48	2 1/2	2	2	33	2 1/2	2	2	100	34
Diamond T-FS&T-1 1/2.	3	1	1	1	V	9	1 1/4	6	1 1/4	35	2	F	11 1/4	3 1/4	4	4	11 1/4	3 1/4	4	4	Opt	34
Diamond T-U-2.	3	1	1	1	V	9	1 1/4	6	1 1/4	35	2	F	13 1/4	3 1/4	4	4	13 1/4	3 1/4	4	4	Opt	34
Diamond TK-3 1/2.	3	1	1	1	V	10	1 1/2	10	1 1/2	35	2	F	15 3/4	3 1/4	4	4	15 3/4	3 1/4	4	4	Opt	37
Diamond T-EL-5.	3	1	1	1	V	10	1 1/2	10	1 1/2	35	2	F	18	4	4	4	17 1/4	4	4	4	Opt	37
Diamond T-S-5.	3	1	1	1	V	9	2	21	2	40 1/4	2	F	18	4	4	4	17 1/4	4	4	4	Opt	37
Diehl A.	3	1	1	1	V	9	1 1/4	12	1 1/4	32	1 1/4	F	28	2 1/2	2	2	27	2	2	2	90	33
Doane 2 1/2-1917-18-19-20.	3	1	1	1	H	9	1 1/4	12	1 1/4	32	1 1/4	F	35	3	3	3	18	3 1/2	4	4	126	35
Doane 3 1/2-1920.	3	1	1	1	H	12	1 1/4	15	1 1/4	38 1/2	1 1/4	F	35	3	3	3	18	3 1/2	4	4	156	35
Doane 6-1917-18-19-20.	3	1	1	1	H	15	1 1/4	17 1/2	1 1/4	43	1 1/4	F	38	3	3	3	24	4	4	4	168	34
Dodge Brothers 1 1/2.	3	1	1	1	H	7	1 1/2	18	1 1/2	31	1 1/4	F	19 1/4	2 1/4	2	2	14 1/2	1 1/4	2	2	47 1/2	35
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## Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING							FRAME			
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency			Length	Width	
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
G.M.C. K-101	4	1 1/4	1 1/4	1 1/4	V	11 1/4	1 1/4	9 1/4	1 1/4	37 1/4	1 1/4	V	17 1/4	4	3/4	4	17 1/4	4	3/4	4	Opt	38
Gramm-Pioneer 10 Speed—1921	4	1 1/4	1 1/4	1 1/4	V	12	2 1/4	14 1/4	1 1/4	29	1 1/4	F	48	2	3/4	2	26	2	3/4	2	97	30 1/4
Gramm-Pioneer 15-1 1/2—1921	4	1 1/4	1 1/4	1 1/4	V	10 1/4	2	6	2	39	1 1/4	F	48 1/4	2	3/4	2	45 1/4	1 1/4	3/4	2	120	32
Gramm-Pioneer 65-1 1/2—1921	4	1 1/4	1 1/4	1 1/4	V	10 1/4	2	6	2	39	1 1/4	F	19 1/4	1 1/4	3/4	4	19 1/4	1 1/4	3/4	4	120	32
Gramm-Pioneer 20-2—1921	4	1 1/4	1 1/4	1 1/4	V	4 1/4	1 1/4	12	1 1/4	32	2 1/4	F	45	2	3/4	4	45	2	3/4	4	126	32
Gramm-Pioneer 30-3—1922	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	9	1 1/4	33	2 1/4	F	22 1/4	2 1/4	3/4	4	22 1/4	2 1/4	3/4	4	129 1/4	36
Gramm-Pioneer 75P-3 1/2—1922	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	9	1 1/4	33 1/4	2 1/4	F	22 1/4	2 1/4	3/4	4	22 1/4	2 1/4	3/4	4	129 1/4	36
Gramm-Pioneer 40-4—1922	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	9	1 1/4	33 1/4	2 1/4	F	28 1/4	2 1/4	3/4	4	28 1/4	2 1/4	3/4	4	144	36
Gramm-Pioneer 50-5-6—1922	4	1 1/4	1 1/4	1 1/4	V	23 1/4	2	13 1/4	1 1/4	40 1/4	2 1/4	F	32 1/4	2 1/4	3/4	4	32 1/4	2 1/4	3/4	4	162	36
Q. W. W.	4	1 1/4	1 1/4	1 1/4	V	12	2 1/4	11	1 1/4	37	2 1/4	F	49	2 1/4	3/4	4	47	1 1/4	3/4	2	89	32
Hall 2-Worm-2 1/2	4	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12 1/4	1 1/4	32	1 1/4	F	11 1/4	3	3/4	4	11 1/4	3	3/4	4	144	38
Hall 3 1/2-Worm	4	1 1/4	1 1/4	1 1/4	V	12 1/4	1 1/4	15 1/4	1 1/4	38 1/4	1 1/4	F	15	3 1/4	3/4	4	15	3 1/4	3/4	4	180	39
Hall 5-Worm	4	1 1/4	1 1/4	1 1/4	V	12 1/4	1 1/4	15 1/4	1 1/4	38 1/4	1 1/4	F	18	4	3/4	4	18	4	3/4	4	144	39
Hall 7-Chain	4	1 1/4	1 1/4	1 1/4	V	12 1/4	1 1/4	15 1/4	1 1/4	38 1/4	1 1/4	F	18	4	3/4	4	18	4	3/4	4	144	39
Harvey WOA-2	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	34	1 1/4	F	44	2	3/4	2	44	2	3/4	2	136	32
Harvey WFA-2 1/2	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	35	1 1/4	F	50	2 1/4	3/4	2	50	2 1/4	3/4	2	136	32
Harvey WHA-3 1/2	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	37	1 1/4	F	56 1/2	2 1/4	3/4	2	56 1/2	2 1/4	3/4	2	144	35
Hendrickson N-2 1/2	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	37	1 1/4	F	12	3 1/4	3/4	4	12	3 1/4	3/4	4	Opt	32 1/4
Hendrickson M-3 1/2	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	37	1 1/4	F	16	3 1/4	3/4	4	16	3 1/4	3/4	4	Opt	36
Hendrickson K-5	4	1 1/4	1 1/4	1 1/4	V	12	2	10	1 1/4	37	1 1/4	F	18	4	3/4	4	18	4	3/4	4	Opt	38
Highway Knight A	4	1 1/4	1 1/4	1 1/4	V	14	2 1/4	10	2 1/4	53	1 1/4	V	57	2 1/4	3/4	2	57	2 1/4	3/4	2	147	38
Highway Knight B-5	4	1 1/4	1 1/4	1 1/4	V	14	2 1/4	10	2 1/4	53	1 1/4	V	69	3	3/4	2	69	3	3/4	2	147	38
Higrade A18-1—1918-19	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	12	1 1/4	3/4	2	12	1 1/4	3/4	2	85	32
Higrade B20-1 1/2—1919-20	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	18	2	3/4	2	18	2	3/4	2	100	32
Hurlburt A1 1/2-2	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	22	2	3/4	2	22	2	3/4	2	132	35 1/4
Hurlburt B2 1/2-4	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	24	2 1/4	3/4	2	24	2 1/4	3/4	2	154	34
Hurlburt C3 1/2-4	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	26	3	3/4	2	26	3	3/4	2	144 1/4	34
Hurlburt D5-5 1/2	4	1 1/4	1 1/4	1 1/4	V	9	2	7	2	32	1 1/4	R	28	3	3/4	2	27	3	3/4	2	144 1/4	34
Huron-Erie 1 1/2	4	1 1/4	1 1/4	1 1/4	V	15	3	10	3	50	2 1/4	F	15	3	3/4	2	50	2	3/4	2	121	33
Huron-Michigan 2 1/2	4	1 1/4	1 1/4	1 1/4	V	15	3	10	3	50	2 1/4	F	15	3	3/4	2	50	2 1/2	3/4	2	145	33
Indiana 12-1 1/2—1921	4	1 1/4	1 1/4	1 1/4	V	17	1 1/4	14	1 1/4	38 1/4	1 1/4	F	17 1/2	2	3/4	4	17 1/2	2	3/4	4	108	32
Indiana 20-2—1921	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	26 1/4	1 1/4	F	44	2	3/4	2	44	2	3/4	2	126	33
Indiana 25-2 1/2—1921	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	26 1/4	1 1/4	F	51	2 1/4	3/4	2	51	2 1/4	3/4	2	138	33
Indiana 35-3 1/2—1921	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	26 1/4	1 1/4	F	56	2 1/4	3/4	2	56	2 1/4	3/4	2	144	34
Indiana 51-5—1921	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	17 1/4	1 1/4	30 1/4	1 1/4	F	68	3	3/4	2	68	3	3/4	2	156	37 1/4
International S-1500 lbs.—Speed Truck '21	4	1 1/4	1 1/4	1 1/4	V	9 1/4	2 1/4	17 1/4	2 1/4	30 1/4	1 1/4	F	38	2	3/4	2	38	2	3/4	2	90	34
International 21-2000 lbs.—1916-21	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	38 1/4	1 1/4	F	43 1/4	2 1/4	3/4	2	43 1/4	2 1/4	3/4	2	75	34
International 31-3000 lbs.—1916-21	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	38 1/4	1 1/4	F	43 1/4	2 1/4	3/4	2	43 1/4	2 1/4	3/4	2	106 1/4	34
International 41-4000 lbs.—1916-21	4	1 1/4	1 1/4	1 1/4	V	6	1 1/4	13	1 1/4	38 1/4	1 1/4	F	50 1/4	2 1/4	3/4	2	50 1/4	2 1/4	3/4	2	111 1/4	32 1/4
International 61-6000 lbs.—1918-21	4	1 1/4	1 1/4	1 1/4	V	9	2 1/4	14 1/4	2 1/4	38 1/4	1 1/4	F	50 1/4	2 1/4	3/4	2	50 1/4	2 1/4	3/4	2	118 1/4	34
International 101-10,000 lbs.—1920-21	4	1 1/4	1 1/4	1 1/4	V	9	2 1/4	14 1/4	2 1/4	38 1/4	1 1/4	F	73 1/4	2 1/4	3/4	2	73 1/4	2 1/4	3/4	2	147 1/4	34
Jackson B 3 1/2	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	9	1 1/4	32 1/4	1 1/4	F	58 1/2	3 1/4	3/4	2	58 1/2	3 1/4	3/4	2	150	36
Kalamazoo G-2-1 1/2	4	1 1/4	1 1/4	1 1/4	V	15 1/4	1 1/4	8	1 1/4	40	1 1/4	F	50	2 1/4	3/4	1	48	2 1/4	3/4	1	120	32 1/4
Kalamazoo H-2 1/2	4	1 1/4	1 1/4	1 1/4	V	20	1 1/4	19 1/4	1 1/4	42	2 1/4	F	90	2 1/4	3/4	1	60	2 1/4	3/4	1	144	34
Kalamazoo K-3 1/2	4	1 1/4	1 1/4	1 1/4	V	20	1 1/4	19 1/4	1 1/4	42	2 1/4	F	60	2 1/4	3/4	1	60	2 1/4	3/4	1	152	36
Kalamazoo K-5	4	1 1/4	1 1/4	1 1/4	V	20	1 1/4	19 1/4	1 1/4	42	2 1/4	F	68	3	3/4	1	68	3	3/4	1	152	36
Kearns H-1	4	1 1/4	1 1/4	1 1/4	V	16	2	18	2	33	1 1/4	F	42	2	3/4	1	21	2	3/4	1	90	34
Kearns N-2	4	1 1/4	1 1/4	1 1/4	V	16	2	18	2	33	1 1/4	F	45	2 1/4	3/4	1	22	2 1/4	3/4	1	120	34
Kelly-Springfield K31 1 1/2	4	1 1/4	1 1/4	1 1/4	V	7	1 1/4	13	1 1/4	54 1/4	1 1/4	V	16 1/4	1 1/4	3/4	4	16 1/4	1 1/4	3/4	4	138	34
Kelly-Springfield K34 1 1/2	4	1 1/4	1 1/4	1 1/4	V	7	1 1/4	13	1 1/4	54 1/4	1 1/4	V	42 1/4	2	3/4	2	42 1/4	2	3/4	2	138	34
Kelly																						

## Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME			
	Piston Rings	Carburetor				Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width	
		No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Master M-2½—1916-20.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	7 1/2	2 1/2	1 1/4	1	7 1/2	2 1/2	1 1/4	1	117 3/4	34	
Master O 2½—1917-20.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	7 1/2	2 1/2	1 1/4	1	7 1/2	2 1/2	1 1/4	1	156 3/4	34	
Master W-2½—1916-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	31	1 1/4	F	13 1/4	3 1/2	3 1/2	2	13 1/4	3 1/2	3 1/2	2	117 3/4	34	
Master WL 2½—1917-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 1/2	4 1/2	4 1/2	2	8 1/2	4 1/2	4 1/2	2	156 3/4	34	
Master D-2½—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	7 1/2	2 1/2	1 1/4	1	7 1/2	2 1/2	1 1/4	1	72 1/2	34	
Master DL-2½—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	7 1/2	2 1/2	1 1/4	1	7 1/2	2 1/2	1 1/4	1	147 3/4	36 1/2	
Master T-6 Tractor—1917-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	35	2	F	16	3 1/4	3 1/4	2	16	3 1/4	3 1/4	2	183 3/4	36 1/2	
Master A-3½—1918-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	35	2	F	16	3 1/4	3 1/4	2	25	4	4	4	147 3/4	36 1/2	
Master AL-3½—1918-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	35	2	F	11	6	6	2	25	4	4	4	183 3/4	36 1/2	
Master E-3½—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	35	2	F	18	4	4	2	18	4	4	2	162 3/4	39	
Master EL-3½—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	37	2	F	18	4	4	2	18	4	4	2	186 3/4	39	
Master B-5—1919-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	37	2	F	11	6	6	2	25	4	4	4	162 3/4	39	
Master BL-5—1919-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	37	2	F	11	6	6	2	25	4	4	4	186 3/4	39	
Master F-5—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	15	1 1/4	35	1 1/4	F	8 1/2	4 1/2	4 1/2	2	54 1/2	3	3	2	72 1/2	43	
Master FL-5—1920-22.....	4	1 1/4	1 1/4	1 1/4	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	16	1 1/4	1 1/4	4	16	1 1/4	1 1/4	4	102	36	
Master DT-6 Tractor—1921-22.....	4	1 1/4	1 1/4	1 1/4	H	13 1/2	2 1/2	7 3/4	2 1/2	44 1/2	1 1/2	F	12	3 1/4	3 1/4	8	8	8	8	8	104	32	
Maxwell 1½—1917-20.....	3	1 1/4	1 1/4	1 1/4	V	6 1/4	2 1/2	7 3/4	2 1/2	44 1/2	1 1/2	F	13 1/2	3 1/4	3 1/4	8	8	8	8	8	122	32	
Menominee HT-1—1918-20.....	3	1 1/4	1 1/4	1 1/4									13 1/2	3 1/4	3 1/4	8	8	8	8	8	146	32	
Menominee H-1½—1916-20.....	3	1 1/4	1 1/4	1 1/4									13 1/2	3 1/4	3 1/4	8	8	8	8	8	149	36	
Menominee D-2—1915-20.....	3	1 1/4	1 1/4	1 1/4									16	3 1/4	3 1/4	8	8	8	8	8	149	38	
Menominee G-3½—1916-20.....	3	1 1/4	1 1/4	1 1/4									18 1/2	4	4	2	33 1/4	2 1/2	2 1/2	2	102 3/4	32	
Menominee J-5—1917-20.....	3	1 1/4	1 1/4	1 1/4									47 1/2	2 1/2	2 1/2	2	33 1/4	2 1/2	2 1/2	2	124	32	
Menominee Ht-1—1920-late.....	3	1 1/4	1 1/4	1 1/4									47 1/2	2 1/2	2 1/2	2	42 1/2	2 1/2	2 1/2	2	131 1/2	32	
Menominee H-1—1920-late.....	3	1 1/4	1 1/4	1 1/4									57 1/2	2 1/2	2 1/2	2	52	2 1/2	2 1/2	2	149	36	
Menominee D-2—1920-late.....	3	1 1/4	1 1/4	1 1/4									57 1/2	2 1/2	2 1/2	2	20	2	2	2	149	38	
Menominee G-3½—1920-late.....	3	1 1/4	1 1/4	1 1/4									69 1/2	3 1/2	3 1/2	2	12	3 1/4	1 1/4	4	108	32	
Menominee J-5—1920-late.....	3	1 1/4	1 1/4	1 1/4									21	2 1/2	2 1/2	2	12	3 1/4	1 1/4	4	132	34	
Moline 10.....	3	1 1/4	1 1/4	1 1/4	H	10 1/2	4 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	3 1/4	4	12	3 1/4	1 1/4	4	132	34	
Moreland 21B-1½—1919-20-21.....	3	1 1/4	1 1/4	1 1/4	H	9	1 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	3 1/4	4	12	3 1/4	1 1/4	4	156	38	
Moreland 21C-2½—1919-20-21.....	3	1 1/4	1 1/4	1 1/4	H	9	1 1/2	13	1 1/2	42	1 1/2	F	13 1/2	3 1/2	3 1/2	4	16	3 1/4	1 1/4	4	168	38	
Moreland 21H-4—1919-20-21.....	3	1 1/4	1 1/4	1 1/4	H	9	2	19	2	42	2	F	16	3 1/4	3 1/4	4	30	2 1/2	1 1/4	1	101	35 1/2	
Moreland 21J-5—1919-20-21.....	3	1 1/4	1 1/4	1 1/4	H	6	2	12	2	36	1	F	44	2	2	1	30	2 1/2	1 1/4	1	101	35 1/2	
Napoleon 9-1—1919-20.....	3	1 1/4	1 1/4	1 1/4	V	6	2 1/2	12	2	36	1	F	49	2	2	2	20	2 1/2	1 1/4	1	104 1/2	30 1/2	
Napoleon 11-1½—1919-20.....	3	1 1/4	1 1/4	1 1/4	V	6	2 1/2	7 3/4	1 1/4	36	1	F	50 1/2	2	2	2	20	2 1/2	1 1/4	1	118 1/2	31 1/2	
Nash 2018-1—1919-20.....	4	1 1/4	1 1/4	1 1/4									49 1/2	2 1/2	2 1/2	2	25 1/2	2 1/2	1 1/4	1	Opt		
Nash 3018-2—1919-20.....	4	1 1/4	1 1/4	1 1/4									49 1/2	2 1/2	2 1/2	2	12	3 1/4	1 1/4	2	Opt		
Nash 4017-2—1919-20.....	3	1 1/4	1 1/4	1 1/4									12	3 1/4	3 1/4	2	12	3 1/4	1 1/4	2	Opt		
Nelson & LeMoon G 2.....	4	1 1/4	1 1/4	1 1/4									16 1/2	3 1/4	3 1/4	4	18	4	4	4	Opt		
Nelson & LeMoon G 3.....	4	1 1/4	1 1/4	1 1/4									18	4	4	2	13 1/2	3 1/4	1 1/4	4	108 1/2	34 1/2	
Nelson & LeMoon G 4.....	4	1 1/4	1 1/4	1 1/4									13 1/2	3 1/4	3 1/4	4	13 1/2	3 1/4	1 1/4	4	195 1/2	34 1/2	
Nelson & LeMoon G 5.....	4	1 1/4	1 1/4	1 1/4									13 1/2	3 1/4	3 1/4	4	12	3 1/4	1 1/4	2	147	56	
Netco DK-2.....	3	1 1/4	1 1/4	1 1/4	V	12	1 1/2	16	1 1/2	40 1/2	1 1/2	F	12	3 1/4	3 1/4	4	4	13 1/2	3 1/4	1 1/4	2	136	34
Netco HL-2½-3.....	3	1 1/4	1 1/4	1 1/4	V	16 1/2	7	1 1/2	1 1/2	34 1/2	1 1/2	F	43	2	2	2	43	2	2	2	148	34	
Niles E-2.....	3	1 1/4	1 1/4	1 1/4									43	2	2	2	51	2 1/2	1 1/4	1	172	36	
Noble B30-1½—1918-20.....	4	1 1/4	1 1/4	1 1/4									51	2 1/2	2 1/2	2	57	2 1/2	1 1/4	1	172	36	
Noble C40-2—1919-20.....	4	1 1/4	1 1/4	1 1/4									57	2 1/2	2 1/2	2	50 1/2	2 1/2	1 1/4	1	118	33	
Noble D50-2½—1919-20.....	4	1 1/4	1 1/4	1 1/4									54	2 1/2	2 1/2	2	54	2 1/2	1 1/4	1	173	34 1/2	
Noble E70-3½—1919-20.....	4	1 1/4	1 1/4	1 1/4									16 1/2	2 1/2	2 1/2	2	16 1/2	1 1/2	1 1/4	1	100	36	
Northway B-2.....	3	1 1/4	1 1/4	1 1/4	V	5 1/4	2 1/2	13 1/2	1 1/2	31	1 1/2	V	16 1/2	2 1/2	2 1/2	2	19	2	1 1/4	1	124	34	
Northway B-3.....	3	1 1/4	1 1/4	1 1/4	V	5 1/4	2 1/2	13 1/2	1 1/2	29	1 1/2	V	16 1/2	2 1/2	2 1/2	2	19	2	1 1/4	1	124	34	
Norwalk 25E-1.....	3	1 1/4	1 1/4	1 1/4	V	9	2 1/2	18	1 1/2	36	2 1/2												



## Replacement Table—Continued

Name, Model and Tonnage	ENGINE										BRAKE LINING							FRAME				
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency			Length	Width	
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Rowe GPW3—1916-17, 1919-20.....	3	4	1 1/4	1 1/4	V	10	1 1/4	6	1 1/4	37	2	F	18	2	1/4	4	18	2	1/4	4	152	33
Rumely A-1 1/2	4	4	1 1/4	1 1/4	V	10 1/4	1 1/4	10 1/4	1 1/4	37	2	F	37	2	1/4	1	37	2	1/4	1	122	34
Samson 15-3/4	3	4	1 1/4	1 1/4	V	6 1/2	1 1/4	7 1/4	1 1/4	35 1/2	2	F	43 1/2	2	1/4	1	35 1/2	2	1/4	1	108 1/4	39 1/4
Samson 25-1 1/2	3	4	1 1/4	1 1/4	V	6 1/2	1 1/4	7 1/4	1 1/4	37 1/2	2	F	20	2	1/4	2	20	2	1/4	2	108 1/4	39 1/4
Sandow G-1—1918-20.....	3	4	1	1	V	10	1 1/4	6	1 1/4	37	2	F	20	2	1/4	2	20	2	1/4	2	96	34
Sandow CG-1 1/2—1918-20.....	3	4	1	1	V	10	1 1/4	6	1 1/4	37	2	F	20	2	1/4	2	20	2	1/4	2	120	34
Sandow I-2—1918-20.....	3	4	1	1	V	10	1 1/4	6	1 1/4	37	2	F	60	3	1/4	1	60	3	1/4	1	132	32
Sandow J-2 1/2—1918-20.....	3	4	1 1/4	1 1/4	V	10	1 1/4	6	1 1/4	37	2	F	13 1/2	3 1/2	1/4	2	16	3 1/2	1/4	2	144	32
Sandow L-5—1918-20.....	3	4	1 1/4	1 1/4	V	10	1 1/4	6	1 1/4	37	2	F	24	4 1/2	1/4	2	24	4 1/2	1/4	2	144	37
Sandow M-3 1/2—1918-20.....	3	4	1 1/4	1 1/4	V	10	1 1/4	6	1 1/4	37	2	F	18 1/2	4	1/4	2	18 1/2	4	1/4	2	144	37
Sanford 25-2 1/2—1917-20.....	3	4	1 1/4	1 1/4	V	51 1/2	2 1/4	51 1/2	2 1/4	51 1/2	2 1/4	F	51 1/2	2 1/4	1/4	2	51 1/2	2 1/4	1/4	2	144	35
Sanford W35-2 1/2—1917-20.....	3	4	1 1/4	1 1/4	V	56	2 1/4	56	2 1/4	56	2 1/4	F	56	2 1/4	1/4	2	56	2 1/4	1/4	2	145	35
Sanford W50-5—1917-20.....	3	4	1 1/4	1 1/4	V	69	2 1/4	69	2 1/4	69	2 1/4	F	69	2 1/4	1/4	2	69	2 1/4	1/4	2	145	35
Schacht F-2.....	4	4	1 1/4	1 1/4	H	11	2	14	1 1/4	37 1/2	2	F	8 1/4	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	140	35 1/4
Schacht F-3.....	4	4	1 1/4	1 1/4	H	11	2	14	1 1/4	37 1/2	2	F	8 1/4	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	140	35 1/4
Schacht E-4.....	4	4	1 1/4	1 1/4	H	10 1/2	2	13 1/2	1 1/4	39 1/4	2	F	8 1/4	3 1/2	1/4	4	15	4	1/4	4	152	35 1/4
Schacht E-5.....	4	4	1 1/4	1 1/4	H	10 1/2	2	13 1/2	1 1/4	39 1/4	2	F	8 1/4	3 1/2	1/4	4	15	4	1/4	4	152	35 1/4
Schacht E-7.....	4	4	1 1/4	1 1/4	H	10 1/2	2	13 1/2	1 1/4	39 1/4	2	F	8 1/4	3 1/2	1/4	4	15	4	1/4	4	152	35 1/4
Schwartz A-1 1/2—1921.....	3	4	1	1	V	9 1/4	2 1/4	13	2 1/4	29 1/4	1 1/4	F	19 1/4	1 1/4	1/4	4	19 1/4	1 1/4	1/4	4	152	35 1/4
Schwartz BW-1 1/2.....	4	4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	33 1/2	2	F	19	2	1/4	2	19	2	1/4	2	120	34
Schwartz CWS-CW-CWL-2 1/2.....	4	4	1 1/4	1 1/4	H	10 1/4	2 1/4	15	1 1/4	33 1/2	2	F	48	2 1/4	1/4	2	48	2 1/4	1/4	2	114	34
Schwartz DWS-DW-DWL-5.....	4	4	1 1/4	1 1/4	H	12 1/2	2 1/4	17	1 1/4	38 1/2	2	F	69 1/2	3	1/4	2	69 1/2	3	1/4	2	114	34
Selden Unit 30—1919-20.....	3	4	1	1	V	12	2	12	1 1/4	31	1 1/2	F	11 1/4	3 1/4	1/4	4	11 1/4	3 1/4	1/4	4	134	34
Selden Unit 50—1920.....	3	4	1	1	V	9 1/4	2 1/4	12	1 1/4	31	1 1/2	F	13	3 1/4	1/4	4	13	3 1/4	1/4	4	176	34
Selden Unit 31.....	3	4	1	1	V	9 1/4	2 1/4	12	1 1/4	31	1 1/2	F	13	3 1/4	1/4	4	13	3 1/4	1/4	4	176	34
Selden Unit 70—1919-20.....	3	4	1 1/4	1 1/4	V	7 1/2	1 1/2	15 1/2	1 1/4	31 1/2	2	F	15 1/2	3 1/4	1/4	4	15 1/2	3 1/4	1/4	4	209	37 1/2
Selden Unit 51.....	3	4	1 1/4	1 1/4	V	7 1/2	1 1/2	15 1/2	1 1/4	31 1/2	2	F	17 1/4	4	1/4	4	17 1/4	4	1/4	4	153	37
Selden Unit 90—1920.....	3	4	1 1/4	1 1/4	V	7 1/2	1 1/2	15 1/2	1 1/4	31 1/2	2	F	17 1/4	4	1/4	4	17 1/4	4	1/4	4	101 1/2	37 1/2
Service 12-3/4-1922.....	3	4	1 1/4	1 1/4	V	13 1/2	2 1/4	14 1/2	2 1/4	38	1 1/4	F	10 1/4	2 1/2	1/4	4	10 1/4	2 1/2	1/4	4	101 1/2	37 1/2
Service 15-1921-3/4.....	3	4	1 1/4	1 1/4	V	10	1 1/4	12	1 1/4	35	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	109 1/2	34
Service 220-1—1919-20.....	4	4	1 1/4	1 1/4	H	10	2	8	1 1/4	33	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	121	34
Service 31-1 1/2—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	121	34
Service 36-1 1/2—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	121	34
Service 51-2 1/2—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	13 1/2	3 1/4	1/4	4	13 1/2	3 1/4	1/4	4	131	34
Service 71-3 1/2—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	16	3 1/4	1/4	4	16	3 1/4	1/4	4	150 1/2	38
Service 76-3 1/2—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	16	3 1/4	1/4	4	16	3 1/4	1/4	4	145 1/2	38
Service 101-5—1919-20.....	4	4	1 1/4	1 1/4	V	10	2	8	1 1/4	33	1 1/4	F	18 1/2	4	1/4	4	18 1/2	4	1/4	4	145 1/2	38
Signal NF-1.....	4	4	1 1/4	1 1/4	V	7 1/4	1 1/2	12	1 1/4	39 1/2	1 1/4	F	11	3	1/4	4	11	3	1/4	4	120	34
Signal H 1 1/2.....	3	4	1 1/4	1 1/4	V	8	1 1/4	9	1 1/4	30	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	120	34
Signal J-2 1/2.....	3	4	1 1/4	1 1/4	V	10	1 1/4	12	1 1/4	30	1 1/4	F	13 1/2	3 1/4	1/4	4	13 1/2	3 1/4	1/4	4	126	34
Signal M 3 1/2.....	3	4	1 1/4	1 1/4	V	5 1/2	1 1/4	12	1 1/4	34 1/2	2	F	16	3 1/4	1/4	4	16	3 1/4	1/4	4	168	38
Signal R-5.....	3	4	1 1/4	1 1/4	V	8	1 1/4	16	2	41	2	F	18	4	1/4	4	18	4	1/4	4	172	38
Standard I-K-1-1 1/2.....	3	4	1 1/4	1 1/4	V	10 1/2	2 1/4	13 1/2	2 1/4	39 1/2	1 1/4	F	10 1/4	3	1/4	4	10 1/4	3	1/4	4	120	32
Standard 76-2 1/2-3.....	3	4	1 1/4	1 1/4	V	12	2 1/4	18	1 1/4	31 1/2	1 1/4	F	13	3 1/4	1/4	4	13	3 1/4	1/4	4	122	32
Standard 66-3 1/2-4.....	3	4	1 1/4	1 1/4	V	12	2 1/4	18	1 1/4	31 1/2	1 1/4	F	15 1/2	3 1/4	1/4	4	15 1/2	3 1/4	1/4	4	144	38
Standard 5K-5-7.....	3	4	1 1/4	1 1/4	V	8	2 1/4	3 1/2	2 1/4	42 1/2	2	F	17 1/4	4	1/4	4	17 1/4	4	1/4	4	144	38
Sterling 1 1/2—1920-21.....	3	4	1 1/4	1 1/4	V	11	1 1/4	19	1 1/4	38	1 1/4	F	11 1/4	3 1/4	1/4	4	11 1/4	3 1/4	1/4	4	120	33 1/4
Sterling 2—1920-21.....	3	4	1 1/4	1 1/4	V	11	1 1/4	19	1 1/4	38	1 1/4	F	13 1/2	3 1/4	1/4	4	13 1/2	3 1/4	1/4	4	120	33 1/4
Sterling 2 1/2—1920-21.....	3	4	1 1/4	1 1/4	V	11	1 1/4	19	1 1/4	38	1 1/4	F	13 1/2	3 1/4	1/4	4	13 1/2	3 1/4	1/4	4	138	34
Sterling 3 1/2—1920-21.....	3	4	1 1/4	1 1/4	V	11	1 1/4	19	1 1/4	38	1 1/4	F	15 1/4	4	1/4	4	15 1/4	4	1/4	4	144	38
Sterling 5-Worm—1920-21.....	3	4	1 1/4	1 1/4	V	11																

## Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME		
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Union F-2½	3	¾	1 ¼	1 ¼	V	20	1 ¼	19 ½	1 ¼	37 ¾	2 ½	F	55	3	1 ¼	1	50	2	1 ¼	1	133 ½	32
Union FW-2½	3	¾	1 ¼	1 ¼	V	20	1 ¼	19 ½	1 ¼	37 ¾	2 ½	F	26	3 ½	1 ¼	1	52	3	1 ¼	1	133 ½	32
Union H-4	3	¾	1 ¼	1 ¼	V	20	1 ¼	19 ½	1 ¼	56 ¾	2 ½	F	56 ¾	3 ½	1 ¼	1	32	4 ½	1 ¼	1	157 ½	34
Union HW-4	3	¾	1 ¼	1 ¼	V	20	1 ¼	19 ½	1 ¼	37 ¾	2 ½	F	26	4 ½	1 ¼	1	24	4	1 ¼	2	157 ½	34
Union JW-6	3	¾	1 ¼	1 ¼	V	20	1 ¼	19 ½	1 ¼	41 ½	2 ½	F	34	4	1 ¼	1	28	5	1 ¼	2	190	36
United 1½	1	1	1 ¼	1 ¼	H	15	2 ½	16	1 ½	37 ¾	2 ½	F	48	2	1 ¼	1	48	1 ½	1 ¼	1	120	33
United-2½	1	1	1 ¼	1 ¼	H	7	2 ½	12	1 ½	37 ¾	2 ½	F	49	3	1 ¼	1	40	2 ½	1 ¼	1	Opt	33
United 3½	1	1	1 ¼	1 ¼	H	7	2 ½	12	1 ½	37 ¾	2 ½	F	62	3	1 ¼	1	58	2 ½	1 ¼	1	Opt	34
United 5	1	1	1 ¼	1 ¼	H	14 ½	2 ½	12	1 ½	37 ¾	2 ½	F	88 ½	2 ½	1 ¼	1	88 ½	2 ½	1 ¼	1	Opt	38
U.S.N.-1½	3	¾	1 ¼	1 ¼	V	11 ½	2	9	1 ½	37 ¾	1 ¼	F	50 ½	2 ½	1 ¼	2	46 ½	1 ½	1 ¼	2	120	34
U.S.R.-2½-3	3	¾	1 ¼	1 ¼	V	10	1 ¼	10	1 ¼	35	1 ¼	F	21	2 ½	1 ¼	2	19 ½	2 ½	1 ¼	2	144	34
U.S.S.-3½-4	3	¾	1 ¼	1 ¼	V	9	1 ¼	8	1 ½	37 ¾	1 ¼	F	50	2 ½	1 ¼	2	50	2 ½	1 ¼	2	156	36
U.S.T.-5-6	4	4	1 ¼	1 ¼	V	15	2 ½	13	1 ½	38 ¾	2	F	62	3	1 ¼	2	33	4	1 ¼	1	168	36
Velie 46-1½-1921	3	¾	1 ¼	1 ¼	V	9 ½	2 ¼	12 ¼	1 ½	40	1 ¼	F	54	2 ½	1 ¼	2	52 ½	2 ¼	1 ¼	2	120	31
Vim 29-½	3	¾	1 ¼	1 ¼	V	9 ½	2 ¼	12 ¼	1 ½	30 ¾	1	F	14 ½	1 ½	1 ¼	4	14 ½	1 ½	1 ¼	4	64	30
Vim 30-½	3	¾	1 ¼	1 ¼	V	9 ½	2 ¼	12 ¼	1 ½	30 ¾	1	F	14 ½	1 ½	1 ¼	4	14 ½	1 ½	1 ¼	4	83 ½	30
Vim 31-1	4	4	1	1	V	9 ½	2 ¼	12 ¼	1 ½	40	1	F	18	2	1 ¼	4	18	2	1 ¼	4	92	32
Vim 22-2	4	4	1	1	V	9 ½	2 ¼	12 ¼	1 ½	40	1	F	42 ½	2 ½	1 ¼	2	42 ½	2 ½	1 ¼	2	120 ½	34
Vim 23-3	5	5	1 ¼	1 ¼	V	9 ½	2 ¼	12 ¼	1 ½	40	1	F	48 ½	2 ½	1 ¼	2	48 ½	2 ½	1 ¼	2	160 ¾	34
Walker M½													43	2 ¼	1 ¼	2	14	1 ¼	1 ¼	4	90	32
Walker K1													45 ½	2 ½	1 ¼	2	16	2	1 ¼	4	96	32
Walker L2													53 ¼	2 ½	1 ¼	2	19	2 ½	1 ¼	4	120	32
Walker P3½													53 ¼	3	1 ¼	2	19 ¼	2 ½	1 ¼	4	140	35
Walker N5													53 ¼	3	1 ¼	2	19 ¼	2 ½	1 ¼	4	162	35
Walker-Johnson B3	4	3	1 ¼	1 ¼	V	10	2	8	1 ½	33 ½	1 ¼	F	13	3 ½	1 ¼	4	13	3 ½	1 ¼	4	133	32 ½
Walter S-5	3	¾	1 ¼	1 ¼	V	10	1 ½	18	1 ½	39	1 ½	F	15	5	1 ¼	4	57	2 ½	1 ¼	2	150	36
Ward LaFrance 2B-2½-3-1920	3	¾	1 ¼	1 ¼	V	7	1 ½	18	1 ½	41 ½	1 ½	F	13	3 ½	1 ¼	4	13	3 ½	1 ¼	4	137 ½	33
Ward LaFrance 4A-3½-4-1920	3	¾	1 ¼	1 ¼	V	8 ½	1 ½	18	1 ½	41 ½	1 ½	F	15 ½	3 ½	1 ¼	4	15 ½	3 ½	1 ¼	4	170	37
Ward LaFrance 5A-5-6-1920	3	¾	1 ¼	1 ¼	V	9 ¼	1 ½	18	1 ½	41 ½	1 ½	F	18	4	1 ¼	4	18	4	1 ¼	4	170 ½	37
Watson B1	4	4	1	1	V	16 ½	1 ¼	4	1 ½	40	1 ½	F	41	1 ½	1 ¼	2	41	1 ½	1 ¼	2	90 ½	30
Watson N-3½	3	¾	1 ¼	1 ¼	V	16 ½	1 ¼	3	1 ½	34	1 ¼	F	62	2 ½	1 ¼	2	47	2 ½	1 ¼	2	147	37
Watson U-5	3	¾	1 ¼	1 ¼	V	16 ½	1 ¼	3	1 ½	38 ½	1 ¼	F	15 ½	3 ½	1 ¼	4	15 ½	3 ½	1 ¼	4	150	36
White Hickory H-1½-1919	3	¾	1 ¼	1 ¼	V	11	2	8	1 ½	41	1 ¼	V	13 ½	3 ½	1 ¼	4	13 ½	3 ½	1 ¼	4	116 ½	32
White Hickory H-1½-1920	3	¾	1 ¼	1 ¼	V	11	2	8	1 ½	41	1 ¼	V	11 ¼	3 ½	1 ¼	4	11 ¼	3 ½	1 ¼	4	116 ½	32
White Hickory E-1-1920	3	¾	1 ¼	1 ¼	V	11	2	8	1 ½	41	1 ¼	V	11	3	1 ¼	4	11	3	1 ¼	4	92 ½	32 ½
White Hickory K-2½-1920	3	¾	1 ¼	1 ¼	V	9	1 ½	8	1 ½	33 ¼	1 ¼	F	13 ½	3 ½	1 ¼	4	13 ½	3 ½	1 ¼	4	150	32
Wichita K-1-1915-20-21-22	3	¾	1 ¼	1 ¼	V	18 ½	1 ¼	12	1 ½	52 ¼	1 ½	F	19 ½	2	1 ¼	4	19 ½	2	1 ¼	4	127 ½	30
Wichita M-2-1915-20-21-22	3	¾	1 ¼	1 ¼	V	18 ½	1 ¼	12	1 ½	52 ¼	1 ½	F	49	2	1 ¼	2	49	2	1 ¼	2	126 ½	30
Wichita RX-2½-1919-20-21-22	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	40	1 ½	F	54	2 ½	1 ¼	2	54	2 ½	1 ¼	2	130	30
Wichita O-3½-1915-20-21-22	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	40	1 ½	F	56 ½	2 ½	1 ¼	2	56 ½	2 ½	1 ¼	2	152 ½	36
Wichita S-5-1919-20-21-22	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	40	1 ½	F	66	3	1 ¼	2	66	3	1 ¼	2	163 ½	36
Wilcox AA-1-1920	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	47 ½	2 ½	F	47 ½	2 ½	1 ¼	2	33 ½	2 ½	1 ¼	2	96	34
Wilcox B-1½-1920	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	47 ½	2 ½	F	47 ½	2 ½	1 ¼	2	33 ½	2 ½	1 ¼	2	132	33
Wilcox C-2½-1920	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	57 ½	2 ½	F	57 ½	2 ½	1 ¼	2	42 ½	2 ½	1 ¼	2	141	33
Wilcox E-3½-1920	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	57 ½	2 ½	F	57 ½	2 ½	1 ¼	2	42 ½	2 ½	1 ¼	2	156	33
Wilcox F-5-1920	3	¾	1 ¼	1 ¼	V	11	1 ½	11	1 ½	69 ½	3 ½	F	69 ½	3 ½	1 ¼	2	52	3 ½	1 ¼	2	148 ½	36
Wilson 1½-1919-20	4	4	1	1	V	13 ½	1 ½	13	1 ½	39 ½	1 ¼	F	39 ½	1 ¼	1 ¼	2	39 ½	1 ¼	1 ¼	2	120	33
Wilson 2½-1919-20	4	4	1	1	V	13 ½	1 ½	13	1 ½	13	3 ¼	F	13 ¼	3 ¼	1 ¼	4	13	3 ¼	1 ¼	4	126	33
Wilson 3½-1919-20	4	4	1	1	V	13 ½	1 ½	13	1 ½	16	3 ¼	F	16	3 ¼	1 ¼	4	16	3 ¼	1 ¼	4	147	38
Wilson 5-1919-20	4	4	1	1	V	13 ½	1 ½	13	1 ½	18	4	F	42	2 ½	1 ¼	2	42	2 ½	1 ¼	2	147	38 ½
Winther 751-1	3	¾	1 ¼	1 ¼	H	15 ½	2	17	2	36 ¾	1	F	48	4	1 ¼	2	48	4	1 ¼	4	147	38 ½
Winther 39-1½	3	¾	1 ¼	1 ¼	V	10	1 ¼	17	1 ½	33 ¼	1 ¼	F	50	2 ¼	1 ¼	2	24	2 ¼	1 ¼	2	102	30
Winther 430-1½	3	¾	1 ¼	1 ¼	V	11 ¼	1 ½	11 ½	1 ½	30 ¾	1 ¼	F	50	2 ¼	1 ¼	2	22 ½	2 ¼	1 ¼	1	120	30
Winther 450-2½	3	¾	1 ¼	1 ¼	V	17 ½	1 ½	8	1 ½	37 ½	1 ¼	F	52	3	1 ¼	2	22 ½	2 ¼	1 ¼	2	120	30
Winther 50-2½	3	¾	1 ¼	1 ¼	V	11 ½	1 ½	8	1 ½	42 ½	1 ½	F	52	3	1 ¼	2	50	2 ¼	1 ¼	2	58	33
Winther 51-2½	3	¾	1 ¼	1 ¼	V	17 ½	1 ½	8	1 ½	42 ½	1 ½	F	62	3	1 ¼	2	50	2 ¼	1 ¼	2	144	33
Winther 70-3½	3	¾	1 ¼	1 ¼	V	21 ½	1 ½	8	1 ½	42 ½	1 ½	F	93	2 ¼	1 ¼	2	60	2 ½	1 ¼	2	156	33
Winther 109-5	3	¾	1 ¼	1 ¼	V	21 ½	1 ½	8	1 ½	42 ½	1 ½	F	93	2 ¼	1 ¼	2	93	2 ¼	1 ¼	2	156	33
Winther 140-7	3	¾	1 ¼	1 ¼	V	21 ½	1 ½	6	1 ½	42 ½	1 ½	F	93	2 ¼	1 ¼	2	93	2 ¼	1 ¼	2	156	33
Wisconsin 2 (Loganville)	3	¾	1 ¼	1 ¼	H	17	2	17	2	34	1 ¼	F	58	2 ½	1 ¼	2	56 ½	2 ½	1 ¼	2	114	34
Wisconsin 2½ (Loganville)																						





# Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

\* An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month

Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET				REAR AXLE		Steering Gear (Make)	TIRES, WHEELS, RIMS		Chassis Weight	Wheelbase	Pr. Cont. of Weights on Rear Wheels											
		Make and Model	Bore and Stroke	N. A. C. C.	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make		Location	Speeds				Universal (Make)	Springs (Make)	Final Drive	Make	Type	Total Gear Ratio	Total Gear Ratio in Low				
																															Front	Rear	Wheels (Make)	Rim Equipment
<b>1000 Pounds</b>																																		
*Dodge Brothers	730	Own	3 1/2 x 5	24	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	1987	114	66.5
Dodge 7000	685	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2015	105	...
Vim 20	1050	Own	3 1/2 x 5	15.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2175	108	...
Vim 30	1175	Own	3 1/2 x 5	15.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2290	127	...
<b>1500 Pounds</b>																																		
Acsom Fast	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3080	142	...
*Acsom G.	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3050	130	...
Brockway E.	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3450	135	...
Clydesdale 18	745	Own	3 1/2 x 5	21.7	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2167	120	...
Clydesdale 19	1890	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	136	...
Garford 15	...	Own	3 1/2 x 5	21.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3500	132	...
H. R. L. J.	2200	Own	3 1/2 x 5	19.6	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3300	134	...
Internat'l Speed Truck S.	1500	Own	3 1/2 x 5	19.6	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	121	...
L. R. L. J.	1350	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2800	121	...
Napoleon 7	1990	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2600	124	...
Rainier R.H.	1250	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2800	121	...
*Republic Rapid Transit	...	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	125	...
Samson 15	1195	Own	3 1/2 x 5	21.8	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	125	...
*Service 12	1240	Own	3 1/2 x 5	21.8	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	125	...
Stewart 14	...	Own	3 1/2 x 5	21.8	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	125	...
Stoughton C.	1195	Own	3 1/2 x 5	21.8	H	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2350	125	...
*Triangle A.	1685	Own	3 1/2 x 5	19.9	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2400	128	...
*White 16	2400	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2600	115	...
Yellow Cab M-22-3	1590	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2400	117	...
<b>1 Ton</b>																																		
Acsom R.	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3650	142	...
*Acsom B.	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3400	130	...
Acsom C.	1450	Own	3 1/2 x 5	19.6	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2450	130	...
*Acsom D.	1750	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2650	130	...
*Acsom E.	1185	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	4200	148	...
Atlas Merchant's Dispatch	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2650	130	...
Avalon 6	1495	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2800	129	...
*Bell M.	725	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2500	126	...
*Belmont "A"	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2500	126	...
*Beasom G.	1285	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2840	125	...
Clydesdale 20	1125	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
Clydesdale 21	2385	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
*Corbitt E-22	1400	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
Day Elder AS	1600	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
Dearyon E (Speed)	1600	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
Delaware G.	1695	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
*Dependable Dispatch A.	1895	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	3200	124	...
Delby 31	1750	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2700	128	...
*Dependable Dispatch A.	...	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2840	130	...
*Earl 40	1895	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2840	130	...
*Federal SD.	1800	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2840	130	...
Ford T.	4300	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W	Own	Own	4.16	19.4	Own	32x4	32x4	32x4	2840	130	...
*Forebaker A.	1400	Own	3 1/2 x 5	22.5	L	C	McC	PT	FS	Stew	V	...	...	DD	NE	W	Own	U	3	...	Own	Own	W</											





Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET				REAR AXLE		TIRES, WHEELS, RIMS		Chassis Weight	Wheelbase	P. Cent of Weights on Rear Wheels															
		Make and Model	Bore and Stroke	N. A. C. C.	Horsepower	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location				Speeds	Universal (Make)	Springs (Make)	Final Drive	Type	Total Gear Ratio	Duction in High	Total Gear Ratio	Duction in Low	Steering Gear	(Make)	Front	Rear	Wheels (Make)	Rim Equipment
Diamond T-T	2250	Hin-Sp 7000	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4150	144
Diehl B	2650	H-Sp 7000	3 1/2 x 5 1/2	19.6	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	2500	120
D-Olt A	1650	Buda WU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	5300	168
Douglas G-1 1/2	1750	Buda WU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	3725	126
Douglas GW	1750	Buda WU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	3725	126
Erle E-1 1/2	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2	29.9	8.2	29.9	Gem	36x3 1/2	36x3 1/2	36x5	Wan	...	4100	144
Federal T	2175	Cont CTU	3 1/2 x 5 1/2	22.5	1	L	GO	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	...	W	U	3	Spic	Math	Row	W	Timk	8.2											



[illegible]





### Chassis Only

Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET				REAR AXLE		TIRES, WHEELS, RIMS		Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels													
		Bore and Stroke	N. A. C. C.	Horsepower	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location	Speeds				Universal (Make)	Springs (Make)	Final Drive	Type	Total Gear Ratio	Total Gear Ratio in Low	Steering Gear (Make)	Tires, Wheels, Rims					
																														Front	Rear	Pneumatic	Wheels (Make)	Rim Equipment	
Acme L.	3875	4 1/2 x 6 1/2	30.6	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	8.75	48.5	Ros	36x5	36x5	Smi	Opt	7000 180	6953 168	50
Apex F.	3975	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	53.73	Ros	36x5	36x5	Smi	Opt	6953 168	6940 168	50
Armstrong K.W.	4075	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	55.25	Ros	36x5	36x5	Smi	Opt	6953 168	6900 166	50
Atterbury 7D-LWB.	3975	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.85	Ros	36x5	36x5	Smi	Opt	6953 168	7270 192	76
Atterbury 7D-Standard.	3950	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.85	Ros	36x5	36x5	Smi	Opt	6953 168	6950 167	76
Autocar Y.	4100	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	52.2	Ros	36x5	36x5	Smi	Opt	7100 166	6950 166	65
Autocar B.	4175	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	52.2	Ros	36x5	36x5	Smi	Opt	6500 176	7150 166	65
Available H34.	3850	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Belmont D.	4425	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Bridgeport R-4	4425	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Capitol M-34.	4100	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Chicago C34.	4100	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Clydesdale 60.	3150	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Dart W.	3150	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Day Elder F.	3150	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Dependable G 34.	3750	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Diamond T-K.	4070	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Dixon.	5100	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Doane 34.	4400	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Duplex K7.	3500	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Duplex E.	3150	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Duplex W.E.	3750	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Garford 77D.	4150	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Giant 17.	4050	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
G. M. C. K-71.	4225	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Gramm-Pioneer 70P.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Hal-Fur E.	3950	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Hal-Fur F.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Hal 3 1/2 Worm.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn.	3950	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn M.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn N.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn O.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn P.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x5	36x5	Smi	Opt	6500 176	6500 176	76
Harvey Hahn Q.	4000	4 1/2 x 6 1/2	32.4	32.4	L	GO	GO	C	FS	Shel	V	Wau	Det	Eis	DiL	Cott	A	4	4	4	Bid	Det	W	Timk	Flot	10.3	49.99	Ros	36x						



[illegible]

Trade Name and Model	Chassis Price	ENGINE DETAILS										GEARSET		REAR AXLE		TIRES, WHEELS, RIMS		Chassis Weight	Wheelbase	Fr. Cont of Weights on Rear Wheels											
		Bore and Stroke	N. A. C. C.	Valve Arrangement	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	Make	Location				Speeds	Universal (Make)	Settings (Make)	Type	Total Gear Ratio	Total Gear Ratio in Low	Steering Gear	Front	Rear	Wheels (Make)	Rim Equipment
<b>5 Ton—Con'd</b>																															
Menominee J.	4850	Wis RAU	4 1/2 x 6	36	L	W	Fin	Fin	FS	Strm	G P	Mon	Det	DP	Eis	Opt	Timk	Flot	11.6	61.43	Ros	36x6	40x12	Smi	23	Fr	8550	180 80	Fr. Cont of Weights on Rear Wheels		
Moreland 21J.	5000	Cont B2	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Mas	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	168	Fr. Cont of Weights on Rear Wheels		
Nelson & LeMoon G6.	5000	Cont B2	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	178	Fr. Cont of Weights on Rear Wheels		
*Old Reliable D.	5000	Wis RAU	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Packard EF.	4850	Own	5 x 6	40	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Parker 57.	4850	Wis RBU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Pierce Arrow R10.	4850	Own	5 x 6	40	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Rainer R-17.	5100	Cont B-2	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Rowe FW 5.	5500	Wis VAU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Sawford W50.	4975	Cont E4	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Schacht.	4400	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Schwartz DWS	4900	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Schwartz DWL	4900	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Selden Unit 90.	4950	Cont B2	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Service 101.	4400	Buda YU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Signal R.	4400	Cont B2	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Standard 5K.	4950	Ster EU	5 x 6	40	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Sterling 5-Worm.	4950	Ster EU	5 x 6	40	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Sterling 6-Chain.	5500	Ster EU	5 x 6	40	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Super Truck 100.	4800	Wis	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Tiffin TW.	4300	Tiffin TW	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Titan 5.	5250	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Titan 6.	4700	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Traylor F.	5000	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Ultimate V 5.	5000	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*United V 6.	4850	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*U. S. T.	4850	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Walker S.	4500	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Ward La France 5A.	4500	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*White 45.	4500	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Wilcox F.	4520	Buda YTU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Winther 109.	3500	Wis VAU	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
*Wisconsin.	3500	Wau	4 1/2 x 6	36	L	W	Own	Own	FS	Strm	Strm	Con	Det	DD	Bos	W	Timk	Flot	10.4	62.19	Lav	36x6	40x12	Smi	23	Fr	9000	188	Fr. Cont of Weights on Rear Wheels		
<b>5 1/2, 6 and 7 Ton</b>																															
*Available H7.	6000	Her T3	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	14	74.90	Ros	36x6	40x14	Smi	23	Fr	12000	190 75	Fr. Cont of Weights on Rear Wheels		
*Boone 6.	5500	Wis RBU	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144 83	Fr. Cont of Weights on Rear Wheels		
*Doane 6.	5500	Wau EU	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	178 70	Fr. Cont of Weights on Rear Wheels		
*Garford 150 A-7 1/2.	5200	Cont E4	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	162	Fr. Cont of Weights on Rear Wheels		
*Hall 7 Chain.	5100	Own	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Kelly-Springfield K60.	5750	Buda YTU	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Mack AC 6 1/2.	5750	Own AC	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Mack AC 7 1/2.	6000	Wau EU	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Mack AC 8 1/2.	6000	Wau EU	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Old Reliable L.	5000	Buda YTU	4 1/2 x 6	36	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot	12.5	48	Ros	36x7	40x14	Smi	23	Fr	12000	144	Fr. Cont of Weights on Rear Wheels		
*Schacht 7 1/2-Chain.	6000	Ster EU	5 x 6	40	L	W	Chic	Chic	FS	Strm	Strm	Pier	B-Li	DD	Bos	W	Timk	Flot													



## ELECTRIC COMMERCIAL CARS

E.C.M.	Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
	Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	103	65
	Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3 1/2	Ross	115	65
	Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	4	C	Timk	S-El	36x5	40x5 1/2	Ross	135	65
	Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5 1/2	Ross	144	65
	Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6	Ross	156	65
	C-T BR2B	1000	2100	1600	14	Opt	.....	G-E	G-E	4	C-T	Flot	Shel	36x3 1/2	36x3 1/2	W	92	65
	C-T BR 2	2000	2400	2150	14	Opt	60	G-E	G-E	4	C-T	Flot	Shel	36x3 1/2	36x4	W	101	60
	C-T BR 2A	1500	2200	1975	14	Opt	60	G-E	G-E	4	C-T	Flot	Shel	36x3 1/2	36x3 1/2	W	91 1/2	60
	C-T BR 4	4000	4000	2575	12	Opt	60	G-E	G-E	4	C-T	Flot	Shel	36x4	36x4 1/2	W	116	60
	C-T AR 7	7000	5000	3550	10	Opt	50	G-E	G-E	4	I	Dead	Shel	36x5	36x5 1/2	W	126	60
	C-T AK 7	7000	5800	3850	11	Opt	50	G-E	G-E	4	I	Dead	Shel	36x5	36x4 1/2	W	122	55
	C-T AK 10	10000	6500	3960	10	Opt	50	G-E	G-E	4	I	Dead	Shel	36x7	36x5 1/2	W	132	55
	Kelland	1500	1950	.....	15	Opt	60	G-E	G-E	4	R	Flot	Mer	34x3	34x3 1/2	Ross	102	60
	Lansden	1400	1400	1600	15	Opt	50	G-E	G-E	4	R	Flot	.....	32x4 1/2	32x4 1/2	Lav	90	50
	Lansden MC 1	2900	1850	12	Opt	50	50	G-E	G-E	4	C	Flot	.....	36x3	36x3 1/2	.....	108	60
	Lansden MD 2	4400	2250	11	Opt	50	45	G-E	G-E	4	C	Flot	.....	36x4	36x3 1/2	.....	120	60
	Lansden ME 3 1/2	5700	2950	10	Opt	45	45	G-E	G-E	4	C	Flot	.....	36x5	36x4 1/2	.....	133	60
	Lansden MT 5	7500	3350	10	Opt	40	35	G-E	G-E	4	R	Flot	.....	36x6	36x5 1/2	.....	146	60
	Lansden MG 6	8900	.....	7	Opt	35	35	G-E	G-E	4	R	Flot	.....	36x7	36x6 1/2	.....	156	60
	Ward WS 2	750	1500	.....	13	Opt	45	G-E	G-E	4	W	Shel	.....	32x3	32x3 1/2	Own	88	60
	Walker M	1000	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3 1/2	Ross	94	66
	Ward WA 2	1250	2350	.....	12	Opt	45	G-E	G-E	4	W	Shel	.....	32x3 1/2	34x4	Own	90	60
	Ward WA	1250	2730	.....	12	Opt	45	G-E	G-E	4	W	Shel	.....	32x3 1/2	34x4	Own	90	60
	Walker K	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3 1/2	36x4	Ross	96	60
	Ward WM	2000	2250	.....	12	Opt	45	G-E	G-E	4	W	Shel	.....	32x3	32x4	Own	88	70
	Ward WL	2000	3420	.....	10.5	Opt	40	G-E	G-E	4	W	Shel	.....	34x4	36x5	Own	102	60
	Walker L	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	38x4	38x6	Ross	112	66
	Ward WD	4000	4500	.....	9	Opt	35	G-E	G-E	4	W	Shel	.....	36x6	36x7	Own	114	60
	Ward WF	7000	6600	.....	8	Opt	30	G-E	G-E	5	W	Shel	.....	36x6	36x10	Own	132	70
	Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	40x5 1/2	Ross	131	66
	Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	40x6 1/2	Ross	141	66
	Ward WH	10000	8200	.....	7	Opt	26	G-E	G-E	5	W	Shel	.....	36x7	40x12	Own	144	70

## Manufacturers and Models Included in Specifications on Preceding Pages

Acason—1/4, 1, 1 1/2, 2 1/2, 3 1/2, 5—Acason Motor Truck Co., Detroit Mich.

Ace—1 1/2, 2 1/2—American Motor Truck Co., Newark, Ohio.

Acme—1/4, 1, 1 1/2, 2, 2 1/2, 3 1/2, 5—Acme Motor Truck Co., Cadillac, Mich.

Ajax—1 1/2—Ajax Motors Corp., Boston, Mass.

Akron Multi-Truck—1 1/4—Thomart Motor Truck Co., Kent, Ohio.

American—2 1/2, 4—American Motor Truck & Tractor Co., Portland, Conn.

Apex—1, 1 1/2, 2 1/2, 3 1/2—Hamilton Motor Co., Grand Haven, Mich.

Armleder—1, 1 1/2, 2 1/2, 3 1/2—O. Armleder Co., Cincinnati, Ohio.

Atco—1 1/2, 2 1/2—American Truck & Trailer Corp., Kankakee, Ill.

Atlantic—1, 2, 3, 5, 6—Atlantic Electric Vehicle Co., Newark, N. J.

Atlas—1—Atlas Truck Corp., York, Pa.

Atterbury—1 1/2, 2 1/2, 3 1/2, 5—Atterbury Motor Car Co., Buffalo, N. Y.

Autocar—1 1/2, 2, 5—Autocar Co., Ardmore, Pa.

Available—1 1/2, 2, 2 1/2, 3 1/2, 5, 7—Available Truck Co., Chicago, Ill.

Avery—1—Avery Company, Peoria, Ill.

Bartlett—7—Bartlett Truck Co., Chicago, Ill.

Bell—1, 1 1/2, 2 1/2—Iowa Motor Truck Co., Ottumwa, Ia.

Belmont—1, 1 1/2, 2, 3—Belmont Motors Corp., Lewistown, Pa.

Bessemer—1, 1 1/2, 2 1/2, 4—Bessemer Motor Truck Co., Grove City, Pa.

Birch—1—Birch Motor Cars, Chicago, Ill.

Bridgeport—1 1/2, 2 1/2, 3 1/2—Bridgeport Motor Truck Co., Bridgeport, Conn.

Brinton—1 1/2, 2 1/2—Brinton Motor Truck Co., Philadelphia, Pa.

Brockway—1 1/2, 2 1/2, 3 1/2, 5—Brockway Motor Truck Co., Cortland, N. Y.

Buffalo—T T—Buffalo Truck & Tractor Corp., Clarence, N. Y.

C. T.—1, 1 1/2, 2, 3 1/2, 5—Commercial Truck Co., Philadelphia, Pa.

Capitol—1 1/2, 2 1/2, 3 1/2—Capitol Motors Corp., Fall River, Mass.

Case—2—J. I. Case Plow Works Co., Racine, Wis.

Chevrolet—1/4, 1—Chevrolet Motor Co. of Mich., Flint, Mich.

Chicago—1 1/2, 2 1/2, 3 1/2, 5—Chicago Motor Truck, Inc., Chicago, Ill.

Climber—1 1/2—Climber Motor Corp., Little Rock, Ark.

Clydesdale—1/4, 1, 1 1/2, 2 1/2, 3 1/2, 5—Clydesdale Motor Truck Co., Clyde, Ohio.

Collier—1, 1 1/2, 2, 2 1/2—Collier Motor Truck Co., Bellevue, Ohio.

Columbia—1 1/2, 2 1/2—Columbia Motor Truck & Trailer Co., Pontiac, Mich.

Commerce—1 1/4, 1 1/2, 2, 2 1/2—Commerce Motor Truck Co., Detroit, Mich.

Concord—1 1/2, 2, 2 1/2, 3—Abbott-Downing Truck & Body Co., Concord, N. H.

Corbitt—1, 1 1/2, 2, 2 1/2, 3, 4, 5—Corbitt Motor Truck Co., Henderson, N. C.

Cyclone—1 1/2—The Cyclone Motor Corp., Greenville, S. C.

Dart—1 1/2, 2 1/2, 3 1/2—Dart Truck & Tractor Corp., Waterloo, Ia.

Day-Elder—1, 1 1/2, 2, 2 1/2, 3 1/2, 5—Day-Elder Motors Corp., Newark, N. J.

Dearborn—1, 1 1/2, 2—Dearborn Truck Co., Chicago, Ill.

Defiance—1, 1 1/2, 2—Defiance Motor Truck Co., Defiance, Ohio.

Denby—1, 1 1/2, 2, 3, 4, 5—Denby Motor Truck Co., Detroit, Mich.

Dependable—1, 1 1/2, 2, 2 1/2, 3 1/2—Dependable Truck & Tractor Co., East St. Louis, Ill.

Diamond T—1 1/4, 1 1/2, 2, 3 1/2, 5—Diamond T Motor Car Co., Chicago, Ill.

Diehl—1, 1 1/2—Diehl Motor Truck Works, Philadelphia, Pa.

Dixon—Dixon Motor Truck Co., Altoona, Pa.

Doane—2 1/2, 3 1/2, 6—Doane Motor Truck Co., San Francisco, Cal.

Dodge—1 1/2—Dodge Bros., Detroit, Mich.

D-Olt—1 1/2, 2 1/2, 5—D-Olt Motor Truck Co., Inc., Long Island City, N. Y.

Dorris—2, 3 1/2—Dorris Motor Car Co., St. Louis, Mo.

Dort—1 1/2—Dort Motor Car Co., Flint, Mich.

Double Drive—4—Double Drive Truck Co., Chicago, Ill.

Douglas—1 1/2, 2, 3—Douglas Motors Corp., Omaha, Neb.

Drake—2—Drake Motor & Tire Mfg. Corp., Knoxville, Tenn.

Duplex—2, 3 1/2—Duplex Truck Co., Lansing, Mich.

Duty—2—Duty Motor Co., Elgin, Ill.

Eagle—2—Eagle Motor Truck Corp., St. Louis, Mo.

Earl—1—Earl Motors, Inc., Jackson, Mich.

Erie—1 1/2, 2 1/2—Erie Motor Truck Mfg. Co., Erie, Pa.

Eugol—1—Eugol Motor Truck Co., Kenosha, Wis.

F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.

Facto—2 1/2—Facto Motor Trucks, Springfield, Mass.

Fageol—2, 3, 4, 5—Fageol Motors Co., Oakland, Cal.

Fargo—2—Fargo Motor Truck Co., Chicago, Ill.

Federal—1, 1 1/2, 2, 3 1/2, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.

Ford—1—Ford Motor Co., Highland Park, Mich.

Forschler—1, 1 1/2, 2, 3—Forschler Motor Truck Mfg. Co., New Orleans, La.

Front Drive—1 1/2—Double Drive Truck Co., Chicago, Ill.

Fulton—1, 2, T.T.—Fulton Motors Corp., Farmingdale, N. Y.

G. M. C.—1, 2, 3 1/2, 5—General Motors Truck Co., Pontiac, Mich.

G. W. W.—1 1/2—Wilson Truck Mfg. Co., Henderson, Ia.

Garford—1 1/4, 1 1/2, 2, 3 1/2, 5, 7 1/2—Garford Motor Truck Co., Lima, O.

Gersix—1 1/2, 2 1/2, 3—Gersix Mfg. Co., Seattle, Wash.

Giant—1 1/2, 2 1/2, 3 1/2, 5—Giant Truck Corp., Chicago Heights, Ill.

Graham—1, 1 1/2—Graham Brothers, Evansville, Ind.

Gramm-Bernstein—1, 1 1/2, 2, 3, 3 1/2, 4, 5—Gramm-Bernstein Motor Truck Co., Lima, Ohio.

Hal-Fur—2, 3 1/2—Hal-Fur Motor Truck Co., Cleveland, Ohio.

Hall—2 1/2, 3 1/2, 5, 7—Lewis-Hall Motors Corp., Detroit, Mich.

Harvey—2, 2 1/2, 3 1/2—Harvey Motor Truck Co., Harvey, Ill.

Hendrickson—2 1/2, 3 1/2, 5—Hendrickson Motor Truck Co., Chicago, Ill.

Highway-Knight—4, 5—Highway Truck Corp., Chicago, Ill.

Higrade—1, 1 1/2—Higrade Motors Co., Harbor Springs, Mich.

H. R. L.—1 1/2, 2 1/2—H. R. L. Motor Co., Seattle, Wash.

Hurburt—1 1/2, 2 1/2, 3 1/2, 5—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.

Huron—1 1/2, 2 1/2—Huron Truck Co., Bad Axe, Mich.

Independent—1 1/2, 2 1/2, 3 1/2—Independent Motor Co., Youngstown, Ohio.

Independent—1, 1 1/2, 2 1/2—Independent Motor Truck Co., Inc., Dayton, Ohio.

Indiana—1 1/2, 2, 2 1/2, 3 1/2, 5—Indiana Truck Corp., Marion, Ind.

International—1, 1 1/2, 2, 3, 5—International Harvester Co., Chicago, Ill.

Italia—2, 3, 5—Italia Motor Truck Co., San Francisco, Cal.

Jackson—3 1/2—Jackson Motors Corp., Jackson, Mich.

Kalamazoo—1 1/2, 2 1/2, 3 1/2—Kalamazoo Motor Corp., Kalamazoo, Mich.

Kearns—1/4, 1 1/2—Kearns-Dughie Motors Co., Danville, Pa.

Kelland—Kelland Motor Car Co., Newark, N. J.

Kelly-Springfield—1 1/2, 2 1/2, 3 1/2, 5, 6—Kelly-Springfield Motor Truck Co., Springfield, O.

- Keystone**—2—Keystone Motor Truck Corp., Philadelphia, Pa.  
**Kimball**—2, 2½, 3, 4, 5—Kimball Motor Truck Co., Los Angeles, Cal.  
**Kissel**—1, 1½, 2½, 4, 5—Kissel Motor Car Co., Hartford, Wis.  
**Kleiber**—1, 1½, 2, 2½, 3½, 5—Kleiber & Co., Inc., San Francisco, Cal.  
**Koehler**—1½, 2½, 3½, T.T.—H. J. Koehler Motors Corp., Bloomfield, N. J.  
**Lange**—2, 2½—Lange Motor Truck Co., Pittsburgh, Pa.  
**Lansden**—¾, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.  
**Larrabee-Deyo**—1½, 2½, 3½, 5—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.  
**Lombard**—T.T.—Lombard Auto Tractor Truck Corp., New York, N. Y.  
**Luedinghaus**—1, 1½, 2—Luedinghaus-Espenschled Wagon Co., St. Louis, Mo.  
**Luverne**—2, 3—Luverne Automobile Co., Luverne, Minn.  
**Maccar**—1½, 2, 2½, 3½, 5—Maccar Truck Co., Scranton, Pa.  
**MacDonald**—7—MacDonald Truck & Tractor Co., San Francisco, Cal.  
**Mack**—1½, 2, 2½, 3½, 5, 6½, 7½, T.T.—International Motor Co., New York, N. Y.  
**Master**—1½, 2½, 3½, 5, T.T.—Master Trucks, Inc., Chicago, Ill.  
**Maxwell**—1½—Maxwell Motor Co., Inc., Detroit, Mich.  
**Menominee**—1, 1½, 2, 3½, 5—Menominee Motor Truck Co., Menominee, Mich.  
**Moline**—1½—Moline Plow Co., Moline, Ill.  
**Moreland**—1½, 2½, 4, 5—Moreland Motor Truck Co., Los Angeles, Cal.  
**Napoleon**—¾, 1, 1½—Napoleon Motors Co., Traverse City, Mich.  
**Nash**—1, 2—Nash Motors Co., Kenosha, Wis.  
**Nelson-LeMoon**—1½, 2½, 3½, 5—Nelson & LeMoon, Chicago, Ill.  
**Netco**—2, 2½—New England Truck Co., Fitchburg, Mass.  
**Niles**—2—Niles Motor Truck Co., Pittsburgh, Pa.  
**Noble**—1½, 2, 2½, 3½—Noble Motor Truck Co., Kendallville, Ind.  
**Northway**—2, 3½—Northway Motors Co., Natick, Mass.  
**Norwalk**—1, 1½—Norwalk Motor Car Co., Martinburg, W. Va.  
**O. K.**—1½, 2½, 3½—Oklahoma Auto Mfg. Co., North Muskogee, Okla.  
**Ogden**—1½, 2½, 3½, 5—Ogden Motor Truck Co., Chicago, Ill.  
**Old Reliable**—1½, 2½, 3½, 5, 6—Old Reliable Motor Truck Co., Chicago, Ill.  
**Oldsmobile**—1—Olds Motor Works, Lansing, Mich.  
**Olympic**—2½—Olympic Motor Truck Co., Tacoma, Wash.  
**Oshkosh**—2, 2½—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.  
**Packard**—2, 3, 5—Packard Motor Car Co., Detroit, Mich.  
**Paige**—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.  
**Parker**—2, 3½, 5—Parker Motor Truck Co., Milwaukee, Wis.  
**Pierce-Arrow**—2, 3½, 5—Pierce-Arrow Motor Car Co., Buffalo, N. Y.  
**Pioneer**—1—Pioneer Truck Co., Chicago, Ill.  
**Pittsburgher**—2½, 3½—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.  
**Power**—1½, 3½—Power Truck & Tractor Co., St. Louis, Mo.  
**Premocar**—1½—Preston Motors Corp., Birmingham, Ala.  
**Rainier**—¾, 1, 1½, 2, 2½, 3½, 5—Rainier Motor Corp., Flushing, L. I., N. Y.  
**Ranger**—2—Southern Motor Mfg. Ass'n, Ltd., Houston, Tex.  
**Reliance**—1½, 2½—Reliance Motor Truck Co., Appleton, Wis.  
**Reo**—1½—Reo Motor Car Co., Lansing, Mich.  
**Republic**—¾, 1, 1½, 2, 2½, 3½—Republic Motor Truck Co., Inc., Alma, Mich.  
**Riker**—3, 4—Locomobile Co. of America, Bridgeport, Conn.  
**Rowe**—1½, 2, 3, 4, 5—Rowe Motor Mfg. Co., Lancaster, Pa.  
**Ruggles**—1½, 2—Ruggles Motor Truck Co., Saginaw, Mich.  
**Rumely**—1½—Advance-Rumely Thresher Co., Inc., La Porte, Ind.  
**Samson**—¾, 1½—Samson Tractor Co., Janesville, Wis.  
**Sandow**—1, 1½, 2, 2½, 3½, 5—Sandow Motor Truck Co., Chicago, Ill.  
**Sanford**—2½, 3½, 5—Sanford Motor Truck Co., Syracuse, N. Y.  
**Schacht**—2, 3, 4, 5, 7—G. A. Schacht Motor Truck Co., Cincinnati, O.  
**Schwartz**—1½, 1½, 2½, 5—Schwartz Motor Truck Co., Reading, Pa.  
**Selden**—1½, 2½, 3½, 5—Selden Truck Corp., Rochester, N. Y.  
**Service**—¾, 1½, 1½, 2, 2½, 3½, 5—Service Motor Truck Co., Wabash, Ind.  
**Signal**—1, 1½, 2½, 3½, 5—Signal Motor Truck Co., Detroit, Mich.  
**Southern**—1, 1½, 2—Southern Truck & Car Corp., Greenboro, N. C.  
**Standard**—1½, 2½, 3½, 5—Standard Motor Truck Co., Detroit, Mich.  
**Sterling**—1½, 2, 2½, 3½, 5, 7½—Sterling Motor Truck Co., Milwaukee, Wis.  
**Stewart**—¾, 1, 1½, 2, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y.  
**Stoughton**—¾, 1, 1½, 2, 3—Stoughton Wagon Co., Stoughton, Wis.  
**Super Truck**—2½, 3½, 5—O'Connell Motor Truck Co., Waukegan, Ill.  
**Superior**—1, 2—Superior Motor Truck Co., Atlanta, Ga.  
**Tiffin**—1½, 2½, 3½, 5, 6—Tiffin Wagon Co., Tiffin, Ohio.  
**Titan**—2, 3½, 5, 6—Titan Truck Co., Milwaukee, Wis.  
**Tower**—1½, 2½, 3½—Tower Motor Truck Co., Greenville, Mich.  
**Traffic**—1½, 2, 3—Traffic Motor Truck Corp., St. Louis, Mo.  
**Transport**—1, 1½, 2½, 3½—Transport Truck Co., Mt. Pleasant, Mich.  
**Traylor**—1½, 2, 3, 4, 5—Traylor Eng. & Mfg. Co., Cornwells, Pa.  
**Triangle**—¾, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.  
**Triumph**—1½, 2, 2½—Triumph Truck & Tractor Co., Kansas City, Mo.  
**Ultimate**—1½, 2, 2½, 3, 5—Vreeland Motor Co., Inc., Newark, N. J.  
**Union**—2½, 4, 6—Union Motor Truck Co., Bay City, Mich.  
**United**—1½, 2½, 3½, 5—United Motors Co., Grand Rapids, Mich.  
**Ursus**—1, 1½, 2½, 3½—Ursus Motor Co., Inc., Chicago, Ill.  
**U. S.**—1½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.  
**Velle**—1½—Velle Motors Corp., Moline, Ill.  
**Vim**—1½, 1, 2, 3—Vim Motor Truck Co., Philadelphia, Pa.  
**Vulcan**—2½—Vulcan Mfg. Co., Seattle, Wash.  
**Walker**—¾, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.  
**Walker-Johnson**—2½—Walker-Johnson Truck Co., Woburn, Mass.  
**Walter**—2, 2½, 3½, 5, 7—T. T. Walter Truck Co., New York, N. Y.  
**Ward**—¾, 1, 2, 3½, 5—Ward Motor Vehicle Co., Mt. Vernon, N. Y.  
**Ward La France**—2½, 3½, 5—Ward La France Truck Co., Inc., Elmira, N. Y.  
**Watson**—¾, 3½, T.T.—Watson Wagon Co., Canastota, N. Y.  
**White**—¾, 2, 3½, 5—White Co., Cleveland, Ohio.  
**White Hickory**—1, 1½, 2½—White Hickory Motor Corp., Atlanta, Ga.  
**Wichita**—1, 2, 3, 3½, 5½—Wichita Falls Motors Co., Wichita Falls, Tex.  
**Wilcox**—1, 1½, 2½, 3½, 5—Wilcox Trux, Inc., Minneapolis, Minn.  
**Wilson**—1½, 2½, 3½, 5—J. C. Wilson Co., Detroit, Mich.  
**Winther**—1, 1½, 2, 2½, 3½, 5, 7—Winther Motor Truck Co., Kenosha, Wis.  
**Wisconsin (Loganville)**—2, 2½—Wisconsin Truck Co., Loganville, Wis.  
**Wisconsin (Sauk City)**—1, 1½, 2½, 3½—Wisconsin Farm Tractor Co., Sauk City, Wis.  
**Witt-Will**—1½, 2—Witt-Will Co., Inc., Washington, D. C.  
**Wolverine**—1, 1½, 2, 2½, 3½—American Commercial Car Co., Detroit, Mich.  
**Yellow Cab**—¾, 1½—Yellow Cab Mfg. Co., Chicago, Ill.  
**Young**—1, 2, 3½—The Young Motor Truck Co., Euclid, Ohio.

## Cackling Hens Pay for Many Trucks

If the hens out in Indiana keep on working full time, and don't pay any attention to the walking delegate of the Egg Layers' Union, Bernie Bovard, of Allensville, Indiana, is going to keep on adding to his fleet of General Motors trucks. Already Bernie has purchased four from the Ratterman Motor Service Co., of Cincinnati, GMC Truck distributors in that territory, and today is operating a two-ton and a 3½-ton truck in gathering eggs and delivering them at the Cincinnati market.

In 1920 he collected and delivered to wholesalers in Cincinnati 14,195 cases of eggs, and in 1921 this number went up to 16,891 cases. As there are thirty dozen eggs to the case this makes the enormous total of 6,080,760 eggs taken to market last year alone. Looking at it another way, if the eggs average two inches long each, the eggs Bovard brought in last year, if placed end to end, would make a string of brown and white beads 192 miles long, or long enough to stretch from Chicago to Indianapolis.

Bovard uses the two-ton job for picking up eggs all over the countryside, and

the larger truck for delivering them to Cincinnati, 55 miles away over poor roads. So poor, in fact, that they are simply impassable when the frost is coming out of the ground in the spring.

He has had a special body built for the big truck, which has a long wheelbase, and on this body he carries 195 cases. He figured out the body dimensions very carefully, so that two cases may be placed crosswise and one lengthwise of the body, the latter in the center. This makes it possible to accommodate 16 cases in the length of the body, and as they are piled

five high, the load is practically the maximum possible for that type of truck.

Bovard gets 40 cents the case for delivering the eggs, and as he often carries groceries and other necessities on his return trip from Cincinnati, he has made good money ever since he went into this work.

When the hens are enthusiastic and putting in full time, and the market price is right, Bovard doesn't hesitate to make a round trip every day, 110 miles, including Sundays, and his truck stands up to the work in fine shape.

### This Truck Carries 195 Cases of Eggs on One Load.

The body is especially constructed to accommodate three rows of crates, five deep.





# Activities of the Motor Truck Association of Philadelphia

## OFFICERS

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President  
W. H. METCALF, Sec'y  
328 N. Broad Street

D. H. ZIMMERMAN  
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THE COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

THE Philadelphia Motor Truck Association, at their last monthly meeting, went on record against the policy of state and national legislative bodies of selecting the automotive industry as a victim for additional tax burdens whenever extra money is wanted for any public purpose.

The matter was brought before them by the secretary, W. H. Metcalf, who read a telegram from the National Automobile Dealers' Association asking the Motor Truck Association to communicate with the Pennsylvania United States Senators and members of Congress objecting to the proposed gas and horsepower tax on automobiles in order to raise money for the soldiers bonus bill. Mr. Metcalf stated that the automotive industry was not opposed to the soldiers bonus, but that it was opposed to being picked as a victim to carry a large portion of that burden when only a few other lines of business were similarly affected. He said if the proposed additional tax of \$120,000,000 a year were imposed the automotive industry would be paying \$450,000,000 a year in various state and national taxes which was surely an unjust burden to place upon it, and tended to hamper industry and work an injustice to a large number of individuals.

Mr. Metcalf stated that the Association was trying to protect dealers and owners of cars, both passenger and truck, and that he had wired national Senators and members of the House recommending that a general sales tax be imposed instead of the taxes on a few industries. A communication was also read by the secretary from the New Jersey Automotive Association relative to the New Jersey State Senate Bill No. 15, proposing to increase motor truck licenses on a scale ranging from a minimum of \$4 increase to a maximum of \$230 increase, according to the capacity of the truck. The New Jersey Automotive Association asked the cooperation of the Philadelphia organization in combating this bill, which was of the same character as that fought by the Pennsylvania motor truck men at Harrisburg last May, when they secured satisfactory adjustments. Mr. Metcalf said that the campaign started by the Philadelphia Motor Truck Association last summer for the organization of motor truck associations in the eastern part of the State was bearing fruit, as an association had been formed at Harrisburg with 35 members, and movements were on foot to the same end at Allentown, Wilkes-Barre and Scranton.

A most interesting address was made

by Judge Eugene C. Bonniwell, who reviewed the life of Abraham Lincoln from boyhood to his death.

The audience was thrilled with a stirring speech by Professor John Dennis Mahoney on the subject, "Intellect Without Morals—Civilization's Greatest Menace."

An illustrated talk showing views on the manufacture of the new Bethlehem rolled steel wheel for motor trucks was given by Charles Schenck, production engineer for the Bethlehem Steel Company. Mr. Schenck showed some remarkable pictures of tests made with the rolled steel wheel, demonstrating its wonderful strength and efficiency under strains several times greater than could possibly be sustained in actual road service.

President Quirk announced the appointment of committee chairmen for the ensuing year as follows: Legislative Committee, F. H. Williams; Legal Committee, Judge Eugene C. Bonniwell; Membership Committee, Wm. J. Barry; Speakers' Committee, Geo. B. Shearer; Good Roads, J. M. Zimmerman; Traffic Committee, Herman Schwacke; Entertainment Committee, R. Arthur Bittong; Publicity Committee, W. B. Bray; Reception Committee, W. T. Bosworth; Special Committee on Used Motor Trucks, C. F. Wolf.

## Metal and Rubber Markets

### Steel Still Quiet

Steel, in fact the entire metal market, persistently holds the same general evenness, except for an occasional flurry either way as a result of some unexpected development, that characterized the markets last month. Indications point rather favorably to a firmer and better market in the near future as a result of greater confidence, demand, production and money manifested is the steady rehabilitation of all business.

### Steel Products Prices

Per ton—Pittsburgh—		
Billets—Bessemer .....	\$28 00	a 29 00
Open hearth .....	28 00	a 29 00
Forging .....	32 00	a 33 00
Sheet bars .....	29 00	a 30 00
Slabs .....	29 00	a 30 00

### Sheets

The following prices are for 100-bundle lots and over, f. o. b. mill:		
Blue Annealed Sheets—		
Pittsburgh (base) .....	\$2 25	a ....
Philadelphia .....	2 61	a ....
New York .....	2 63	a ....
Galvanized Sheets—		
Pittsburgh .....	4 00	a ....
New York .....	4 38	a ....

### Iron and Steel at Pittsburgh

Skelp, grooved steel .....	\$1 50	a 1 60
Skelp, sheared steel .....	1 50	a 1 60
Strip steel, cold .....	3 50	a ....
Strip steel, hot .....	1 85	a 1 90

### Miscellaneous Metals

Seamless tubing, bronze ....	21 00	a ....
Seamless tubing, copper ....	20 75	a ....
Seamless low brass tubing...	22 00	a ....
Seamless high brass tubing..	18 00	a ....
Brazed tubing, brass .....	23 00	a ....
Brazed tubing, bronze .....	28 00	a ....
Brazed tubing, copper .....	28 00	a ....

### Antimony

The market continues dull, with only a very light demand from the consuming interests, who appear to have on hand sufficient stocks to meet their requirements for a little while to come.

### Old Metals

Following are dealers' buying and selling prices for large quantities f. o. b. cars New York:

Aluminum—		
Cast scrap .....	8 a 8½	8¼ a 9
Sheet scrap .....	7½ a 8	8¼ a 8¾
Clippings .....	12 a 12½	13 a 13½
Copper—		
Light and bottoms .....	7¼ a 8	8½ a 9
Brass, casting .....	5¼ a 5½	6 a 6¼
Brass, light .....	4½ a 4¾	5¼ a 5½

Brass, heavy .....	4¼ a 4¾	5¾ a 5¾
Lead, heavy .....	3¾ a 3¾	4¼ a 4¾

### Rubber Easier

Tone as will be noticed is easier throughout.

Para—Up-river, fine .....	17¼ a ..
*Up-river, coarse .....	13 a ..
*Island, fine .....	16 a ..
Island, coarse .....	7½ a ..
Cameta .....	.. a 9
Amber—*No. 1 .....	15 a ..
No. 2 .....	14¼ a ..
No. 3 .....	14 a ..
Smoked ribbed sheets .....	15 a ..
*Centrals—Corinto .....	.. a 10
*Esmeralda .....	.. a 10
*Mexican scrap .....	.. a 9½
*Guayule, wet .....	.. a 13
*Guayule, dry .....	.. a 28
*Balata, block, Ciudad .....	.. a 55
*Balata, block, Colombian .....	.. a 42
*Balata, Panama .....	.. a 40
*Balata, sheet .....	68 a 70
*Benguella, No. 2 .....	7 a 9
*Kassal, prime black .....	14 a ..

\*Nominal.

### Scrap Rubber

There is little doing and prices remain at very low levels.

Inner tubes, No. 1 .....	.. a 3½
Inner tubes, No. 2 .....	.. a 2½
Tires—Automobile .....	¼ a ¾





Truck dealers, and operators as well, have had a full year in which to take note of their shortcomings along the lines suggested herein and if they have conscientiously impressed upon themselves the necessity of getting away from the "good old days" style of doing business—both dealer and operator will benefit.

# Taken From Current House Organs

## A Summary of Forecasts

Much of the discussion about economic conditions is subject to this analogy. The same statistics and figures bring observers to almost contradictory conclusions. You can take the medicine that appeals to you, but you find that the ingredients are much the same.

According to a particular writer, the automobile business expects a satisfactory year, or expects a lean year, but the general predictions of quantity are the same and they indicate that the year is not going to be lean—in fact, should show a very good business, not a satisfactory business, because nothing short of the maximum of 1920 will be satisfactory to us yet.

In comparison with other lines, and in comparison with its own possibilities of production, the automotive field has some cause for encouragement and has a great deal of cause for renewed activity, more definite analysis, and more careful consideration of its development.

There may be a number of showers and a lot of rainy days, but the reliable weather prophets are not predicting either a millennium or a cataclysm.—*Republic Round Table*, Republic Truck Sales Corp., Alma, Mich.

## How Do We Register?

When we were students in school, our reward was in the percentage column of excellence in performance in our school tasks.

We were then only getting ready to live our lives.

Are we, who are selling today, satisfied with the marks we can conscientiously place in the following report card?

- 0—I won't.
- 10—I can't.
- 20—I don't know how.
- 30—What is it?
- 40—I wish I could.
- 50—I think I might.
- 60—I might.
- 70—I think I can.
- 80—I can.
- 90—I will.
- 100—I did.

—*The Hayes Wheel*, Hayes Wheel Co., Jackson, Mich.

## Should "No" Mean "No" to a Salesman?

We recently sent a man out to sell who had never had any experience.

Like a good many of us when we first went out, he made a prodigious number of calls the first week. An old-timer, looking over his weekly report, would have smiled at the picture of the amount of shoe-leather and leg-work it took to get all these people called on.

He stayed long enough for the prospective customer to say "No" and then beat it on to the next place.

This is a much better plan than working your customers from a pool room or

a movie house, and John Bruce worked it out successfully with new salesmen in typewriter selling. But it's merely the start, a stage through which we all have to go.

We wrote this new salesman to remember that there were all sorts and varieties of meaning to the word "No"; that occasionally he would run against an armor-plated "No" that could not be penetrated, but that nine times out of ten "Nos" are made of paper and putty and a good sales argument would go right straight through them, and in fact until a man learned not to believe the customer when he said "No" he wasn't a regular salesman.

We pointed out that the prospect's "No" frequently meant

- (A) Not yet.
- (B) I don't understand.
- (C) I can't afford it.
- (D) I don't feel well.

etc., and that there was a remedy for some of these "Nos" that an eager salesman could find.

We've just had a letter from this man (he's going to turn out to be a salesman, there's no doubt of it) which reads:

"I called on a customer, showed him my goods, told him all I know about them, and received the same old answer, 'No.' As I got up to leave I thought I would try him once more for luck, and left with his order for three Trio Die Stocks."

As has been pointed out somewhere else, there's many a married man who would be a bachelor today if he had taken the first "No" that his wife gave him as final.—*Greenfield Tap & Die Corp.*, Greenfield, Mass.

## The Salesman Carries the Key

The salesman carries the key which will unlock the door of industry. For years to come America's prosperity will be in his hand. He must produce the orders which will enable factories to operate and thereby restore normal business.

People must buy if the volume of business is to be restored to normal. Buying is largely conditional upon selling. So again the importance of the salesman must be recognized and appreciated.

Each order secured by a salesman aids in the return to normalcy. The sale of one product or one article encourages the sale of other products.

If the salesman carries the key which will unlock the door of industry, then industry must recognize the salesman's position and afford him every opportunity to use the key. The salesman must recognize his position, put forth the supreme effort to sell his product and to surround the sale with the idea that business is better for the man who helps to make it so.—*Acme Angles*, Acme Motor Truck Co., Cadillac, Mich.

## The Egotist

You have heard of him before. He is the fellow who flits into an organization and flits out the same way when his true nature is revealed. He is the man who lands one big account and then gets the idea that his firm cannot get along without him.

After his first big sale, he has to buy an entire new wardrobe to accommodate the sudden expansion of his chest and that part of his cranium just above the ears. It's a mystery to him how the people he works for ever made any progress before they had the luck to find him—the Super-Salesman.

He gets cocky; fails to report regularly; pads his expense account, and from among the fleecy clouds looks down on the suggestions and recommendations of "the Old Man" as something that is meant for the other fellow.

He rests on his laurels; gets overconfident and neglects to go after the small orders, feeling secure that he will land other big deals without any trouble.

His attitude is soon reflected in his sales sheet, with the result that he soon finds himself with the rank of private in the army of the unemployed, his place filled by an aggressive, hard-working, dependable plugger.

Don't be an egotist. Don't become too self-centered. Don't let your pride get out of bounds. Be a 365-day man, on the job all the time. The flash in the pan does not eat regularly. If you have real worth and display real ability, it will be quickly recognized by "the Old Man" and rewarded accordingly.—*Milwaukee Tank News*, Milwaukee Tank Works, Milwaukee, Wis.

## What Broke the Strike?

The fear of public opinion caused the railroad labor leaders to call off the threatened strike, it was stated, when the glad, relieving news came that the tie-up had been averted.

True enough, public opinion, the irresistible weapon of a people's government, quenched the strike, but what was the very sinew of the collective strength of the public? The motor truck—the reliance and hope of the country in event the rail conveyances came to a standstill.

The people knew what the motor was doing for them in the routine of normal transportation; they knew the emergency capabilities of the commercial car should a strike be called. 900,000 motor trucks were ready to act and 8,500,000 passenger cars prepared to assist in carrying on the national transportation.

Happily it proved unnecessary to call out the automotive reserve. But it is assuring to realize that here at our side are ten million motor vehicles that can be swung instantly into emergency transport service. A mighty force seriously to be reckoned with by those who would suddenly apply the tourniquet to the arteries of rail traffic.—*Reo Review*, Reo Motor Car Co., Lansing, Mich.



# California Test Work Already Promising

**Future Road Construction Engineers Will be Furnished With Valuable Data on Both Construction and Endurance Previously Unknown or Uncertain. The Testing Apparatus Employed Includes Many Ingenious and Practical Instruments**

**T**HERE is a principle in road construction underlying the test highway experiment, of Pittsburg, Cal., which has been closely followed by the COMMERCIAL CAR JOURNAL since its beginning last November, that will manifest itself to the naked eye before the tests have been completed, and out of the maze of figures now being grouped by the dozens of engineers and clerks employed in making observations there will come an array of facts that will serve as a guide for road building in the future.

Some very valuable data has already been obtained on moving loads, static loads, and impact loads. This data was obtained by means of the instruments installed in the tunnels built under the test highway. Fig. 2 shows a truck making the impact test; Fig. 3, the moving load test, and Fig. 4 the static load test.

For the impact test, planks of various thickness, one at a time, were placed across the track, over which the motor truck is run. Records are taken of the impact as the front wheels pass over the plank and drop, as well as the rear. Some of the impact tests

were made of trucks traveling from ten to twelve miles an hour. There is considerable difference in the impact of the front wheels as compared with the rear wheels. The various impacts are recorded automatically by pens on recording paper, and by Ames dials, both of which are shown in Fig. 1. From these instruments all variations in deflection resulting from impacts against the pavement, caused by a truck being driven over

planks with  $\frac{1}{2}$ -in. fall, 1-in. fall,  $1\frac{1}{2}$ -in. fall, or 2-in. fall, are noted.

During these tests an interesting thing occurred. Part of the tire on one of the truck wheels became loose. This loose part was cut away, after which the truck

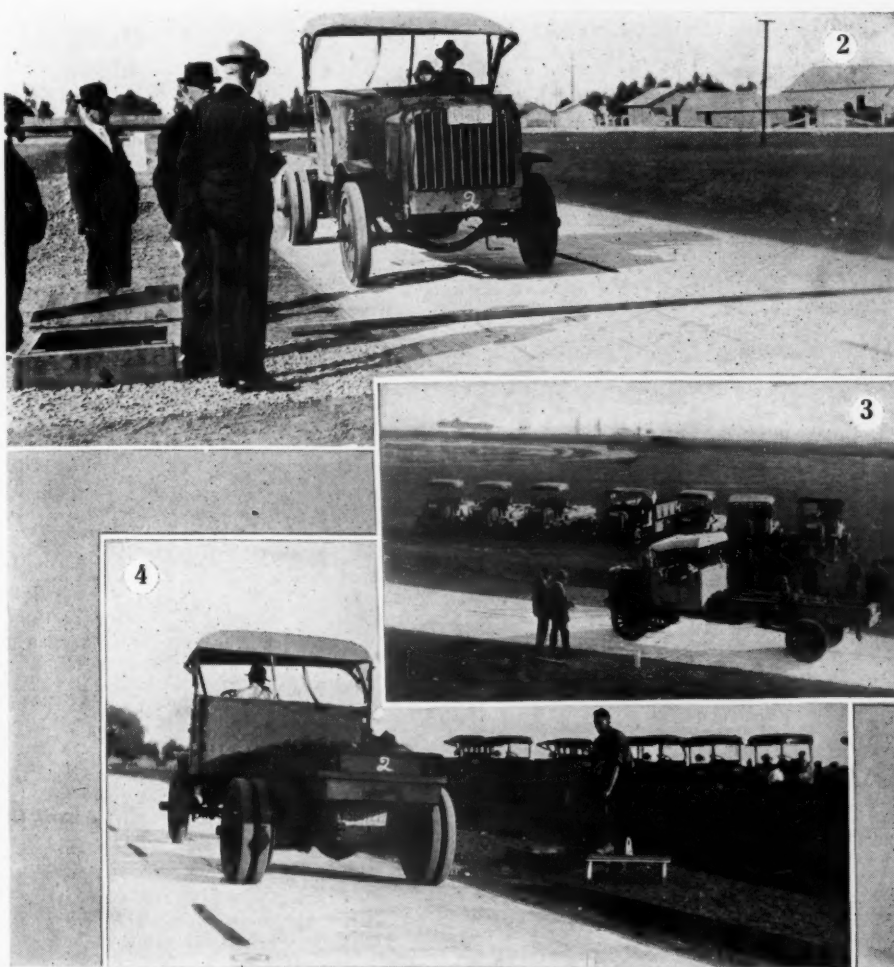
load test and static load test. Different lines on the recording sheet show deflection of pavement under the moving test, and deflection under static load. Comparison of these lines indicate that a moving load is not as great a strain on pavement as a load

standing still. In the static load test (see Fig. 4) the truck is run over the tunnel and stopped every few feet, and the deflection read on Ames dials. The pens make a permanent record on the moving record sheet. In the moving load test and the static load test the planks are not placed across the test road, as in the impact tests.

An interesting feature of the test is the method of taking borings of the sub grade (see Fig. 12). Holes have been provided in the concrete pavement through which these borings are taken. The holes are closed with wooden plugs, one of which is shown at the left of the illustration. Borings were taken when the sub-grade was perfectly dry and the moisture content determined. The borings were then replaced and tamped down. Later, water was turned into the ditches and the sub-grade flooded, after which borings were again taken to de-

termine the rate of percolation (or moisture content). These sample borings will be continuous throughout the tests. From observations taken in the observation tunnels the relationship between the moisture content of the sub-grade and its bearing power will be learned.

Another phase of the test is the recording of cracks. As soon as a crack appears, or as an old one gets larger, it is recorded on a chart (see Fig. 7). When



**Showing Actual Tests Being Made**

Fig. 2. Plank laid across the pavement for impact test. Note tunnel entrance at left. Fig. 3. Moving load test. The truck is passing over the observation tunnel, traveling at a speed of from ten to twelve miles an hour. Fig. 4. Truck making static load test. For this purpose the pavement on either side of the tunnel, entrance to which is seen at the right, for a distance of about 25 ft. is marked off in foot sections like a ruler. The man at tunnel entrance informs the observer in the tunnel at just what point the truck is standing when deflection readings are taken.

was permitted to continue around the track, in order to determine just how destructive such tire condition would be on a pavement. The instruments in the tunnels soon showed the destructive effect on the pavement. This goes to show that good tires will go a long way toward preserving the pavements, and that even a slightly flat or worn tire is very hard on pavements.

Figs. 3 and 4 show a truck in moving

the test is completed this chart will show the location and daily development of every crack on the test track.

In the tests of the highway it is very important that a complete record of the temperature of the concrete and atmosphere be kept.

Holes have been drilled into each of the seven sections of the test track. When the operator desires to take the temperature of the concrete (this being done regularly) he removes the cork from the top of these holes and inserts the thermometer, the bulb of which is immersed in the mercury in the bottom of the hole. He waits one minute, which gives the thermometer sufficient time to register the temperature of the mercury in the hole, which is, as explained, the same temperature as the concrete. He then removes the thermometer and records the temperature in a special book provided for this purpose. The hole that extends to a point near the bottom of the concrete shows the temperature of the bottom of the slab, and the one extending to a point near the center of the slab shows the tem-



Test Highway After Water is Turned Into the Side Ditches to Flood the Sub-grade

perature of the center and the shallow hole shows the temperature of the top of the slab.

Fig. 9 shows how the Ames dial is used in determining the upward movement of the concrete at the inner edge of a slab. A rain gage (Fig. 10 shows the gage) which also figures prominently in the test,

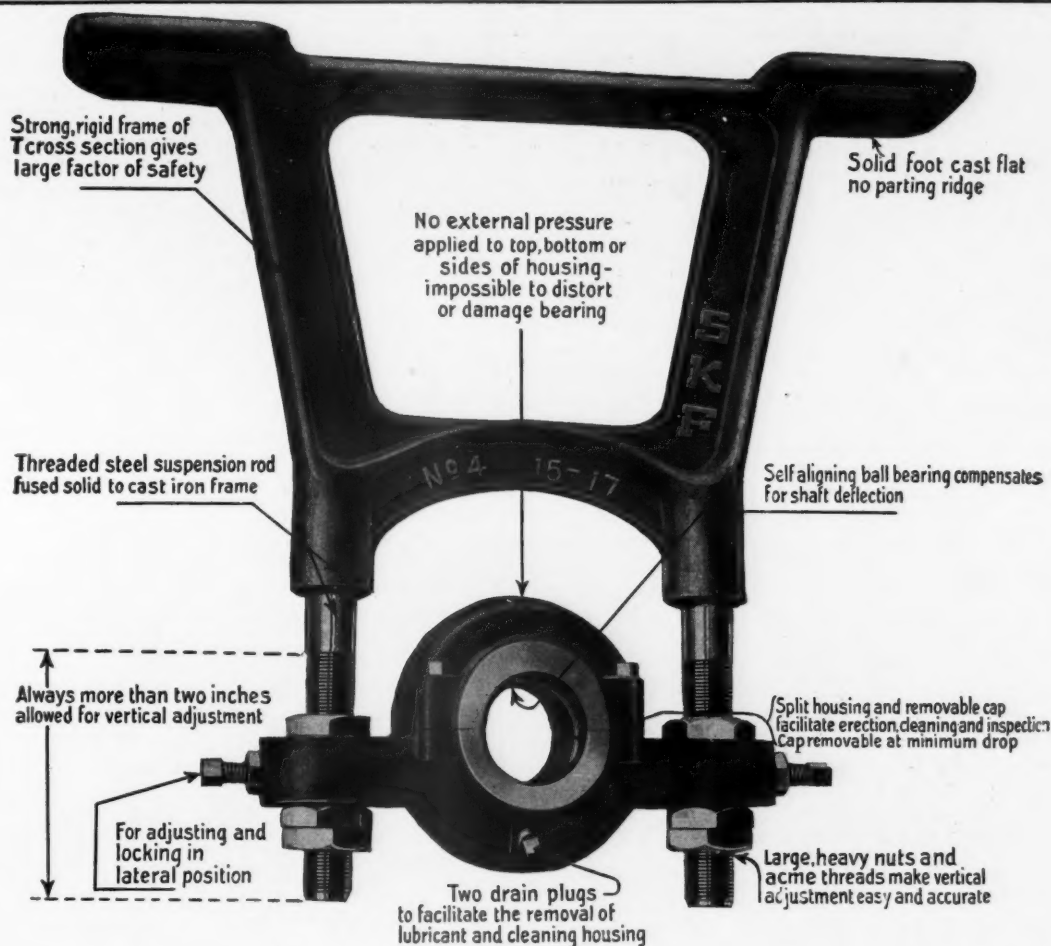
has been installed at the track. By measuring the rainfall, and determining the moisture content of the soil, it will be possible to determine how much rainfall is effecting the slabs. An instrument, known as the thermograph, for registering the temperature of the air, is also included in the engineer's equipment.



Six Views Showing How Engineering Data is Being Assimilated

Fig. 6. Taking borings in sub-grade. Fig. 7. Charting cracks. Fig. 8. Taking temperature of concrete pavement. Fig. 9. Using Ames dial to measure rise of concrete at inner edge of test track. Fig. 10. Rain gage installed at test highway. Fig. 11. Thermograph installed at test highway.





# INTRODUCING

## THE IMPROVED SKAYEF SELF-ALIGNING BALL BEARING HANGER

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# A Motor Truck Salesman's Observations

Perhaps the Viewpoint is Different From That of the Factory Manager

By C. H. COREY

**T**HE writer has "pounded the pavements" in search of "leads" and sales, making sometimes as many as 200 calls to find five or six live prospects. This experience has given him some practical, not theoretical, ideas as to why there is no "morale" to motor truck distribution today, and why the so-called "selling" of motor trucks by representative concerns has degenerated into a mad scramble to "buy" the sales which are made, either through excessive allowances for the customers' used trucks; large discounts or long terms and in many cases a combination of all these methods.

A concrete instance of this occurred when the buyer of a truck from one of the "big four" told me with surprise and pride that he **actually wrote his own proposition**, and it was accepted. This included the fact that the **buyer set his own price** on the truck he "sold" to the motor truck branch. The suggestion that perhaps even at that the buyer could have made better terms was received with a laugh and the statement "he thought another of the big concerns would practically have given him a truck if they could have saved their face."

Having had plenty of contact with the buyer and user, one fact stands out especially clear, which is, that the buyer has been successfully educated as to trade practices, trade discounts and expectations, which, if followed in his own line, would result in business suicide. The results of bad marketing are with us and what we are after is any suggestion which will lead to saner, and, what is more to the point, profitable methods of distribution. A discussion could be started as to the relative advantage of marketing through branches or dealer agencies, but, other than to state an opinion that branches are more desirable and successful for the largest cities, it will not be entered upon. Taking the United States, as a whole, the figures show that more trucks are sold outside the largest cities than in them. Of course, the representative companies take fairly good care of their users in the larger cities at a fairly good price for services rendered. Let us forget this for the present and look for a better method of contact between the factory and user in the smaller cities, towns and the country districts.

Anywhere and everywhere the value of a truck to its owner is measured by the ability to keep it running. This means that the seller must be able to furnish repair parts and necessary service facilities at a reasonable cost **on demand**. When these duties are performed with promptness and a certain amount of courtesy, it is a poor sort of human being who does not respond with loyalty to the truck

he uses and to the organization which sold it to him.

Now we come to the reason for the opening remark on getting "leads." Under my working conditions, I have found it more difficult and more expensive to get leads than to sell against competition. I believe that the manufacturer or dealer who can get enough leads, to keep good salesmen busy, through the word of mouth medium of satisfied users and drivers, has solved the problem of successful motor truck selling. Well recommended is more than half sold. Bearing in mind the previous statement that an increasing majority of trucks will be sold outside the largest cities, the following outline is offered as practical, though, naturally,



C. H. Corey

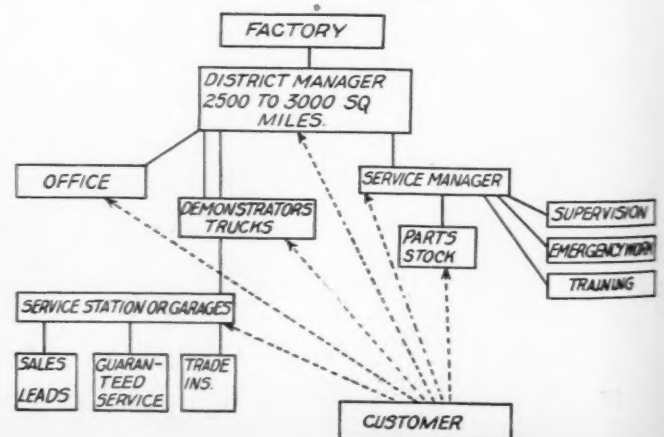
Discusses some of the trade evils in the industry

predicated on the care and ability with which men are chosen, something the manufacturers have not worried much about in the past, just as long as the drafts for trucks were lifted promptly. The day of selling to the dealer has passed. To stay in business, from now on, trucks will have to be sold to the user and direct factory responsibility and contact established. The plan outlined below can be used either as direct factory representation or through a properly qualified dealer.

This plan will have to speak for itself, but it might be well to touch on a few of the main points.

Existing methods of allotting territory by Counties or States will have to go by the board and a central station established from which it will be possible for the district or service manager to make a round trip in one day to his most distant user. This will give personal contact, and also enable the service manager to keep a truck running should the local service man be unable or unwilling to do so.

Naturally the stock of parts should be under the direct supervision of the service manager, and he should be given authority to make adjustments and give credit for defective parts. Many an enemy has been made while the claim for defective parts is being referred to the factory and then to the individual parts makers for adjustment. This responsibility must be localized. The service stations are to be located in suitably investigated, going, profitable garages. The proprietors of these are to collect live leads, when, upon notification, the district manager will send demonstrating chassis for a stated time and will personally assist in closing prospects, appointments having been made for him. After sale, truck to be followed and adjusted for 30 days by local service station. For remaining 60 days of 90-day guarantee period factory to make allowances for work done. As no initial investment is required of the local man his attention can be given to getting prospects and his reward is real money, this amount depending on the terms of sale and how it is financed. The crux of the whole matter is that the wants and needs of the user are planned for as well as humanly possible and no matter what happens to the local representative the trucks in that territory can be kept running. The control of the maker's trucks is practically in his own hands. The results are a better class of owners, a better reputation for the trucks. The time is coming when these factors will control the facility with which bank loans can be made on certain makes of trucks. The personnel in the smallest practical unit would consist of two men and a stenographer. The expenses would be salaries, rent, office expenses, interest on cost of stock of parts and interest on factory cost of demonstrators, two cars and expenses. The test is to properly explain the working of an organization of this character to a prospective buyer and be governed by his reaction. The buyer has rights and they consist of more than the privilege of paying the initial cost of a truck.





## Care of Gasoline Pumps During Cold Weather

By C. E. PASK

Atmospheric conditions and changes in the weather, particularly during the winter, are the cause of a certain amount of moisture collecting in all gasoline pumps and underground tanks.

A few makes of gasoline pumps are equipped with filtering devices that separate the water from the gasoline. It is very important that all gasoline pump owners drain the filter on their pumps during cold weather. If this is not done frequently the pumps will freeze and cannot be operated.

All that is necessary to drain a filter is to open the valve of the filter drain-off cock and operate the pump handle slowly. This will cause all water collected in the filter to flow from the pump. One can determine when the filter is free of water by using an ordinary glass or other transparent receptacle, as the water will always settle to the bottom of the glass.

It is important that the pump plunger be returned to the bottom of the cylinder after such an operation.

If by any chance you have neglected to properly drain your filter and the pump freezes, do not attempt to thaw it out by using a torch of flame of any kind. Use a spray of steam if possible. If not, heat two or three bricks or light an equal number of electric light globes and pack them around the cylinder of the pump and close the pedestal door. Such treatment will take care of the ordinary cases of pump freezing. If, however, the pump is frozen solid, it will be necessary to take the cylinder entirely off and thaw it out indoors. But under no circumstances use a flame.

If the filter is drained two or three times a week in cold weather no trouble will be experienced from freezing.

Water very frequently gets into the gasoline before it gets into the underground tank. If such is the case it will be necessary to get it all out or the pump will continue to freeze. Difficulty will seldom be experienced in this respect unless the tank is allowed to become entirely empty. Water always seeks a lower level than the gas, hence it remains on the bottom of the tank.

It is important to have all joints absolutely tight so that no water can seep into the tank. Particular attention is called to the packing nut on top of the underground tank.

## Hauling Gravel for "The King of Trails"

John Haney has a large fund of facts about building roads and hauling road materials. He has collected these from actual experience and close personal contact with road work through a long period of years. Mr. Haney is senior partner of the firm of Haney & De Wall, contractors, Correll, Minnesota. Mr. Haney's experience qualifies him to speak authoritatively on efficiency and economy in road construction.

When Mr. Haney started building roads he used horses for his hauling work.

And he always used good horses, because he is a firm believer in the accuracy of the phrase, "The best is the cheapest in the long run." His experience has always upheld him in this belief. There is more to "cost" than the mere purchase price. The value of any sort of equipment can only be determined by the work it will do in a given length of time, how long it will continue to do that work, and the relation of this total amount of work to the combined original cost and upkeep expense. And this is the point which first caused John Haney to start figuring in terms of motor truck haulage.

When Haney & De Wall took on the contract to build "The King of Trails" through Big Stone County, Minnesota, Mr. Haney's analytical method of figuring convinced him that dependable motor trucks ought to do the work better, quicker, more efficiently and more economically. So he decided to invest in a number of trucks, not to replace his horses, but to work alongside of them. Mr. Haney has a conservative side in his make-up, which he knows how to use to help develop his progressive ideas in a safe and accurate way.

By working his horses and trucks side by side, Mr. Haney planned to get accurate, first-hand information and data regarding the comparative merits of horses

and trucks for road construction hauling work. So he spent considerable time and effort investigating the mechanical features, performance records, operating costs, and service facilities.

He started work in "The King of Trails" with six International Motor trucks of 6000-pound capacity, equipped with specially constructed dump bodies. They were used for hauling gravel from the pit to the job. Working side by side with the six trucks were Mr. Haney's horses and wagons. The result of this direct comparison is best shown by what Mr. Haney had to say about it a short time after the work was started.

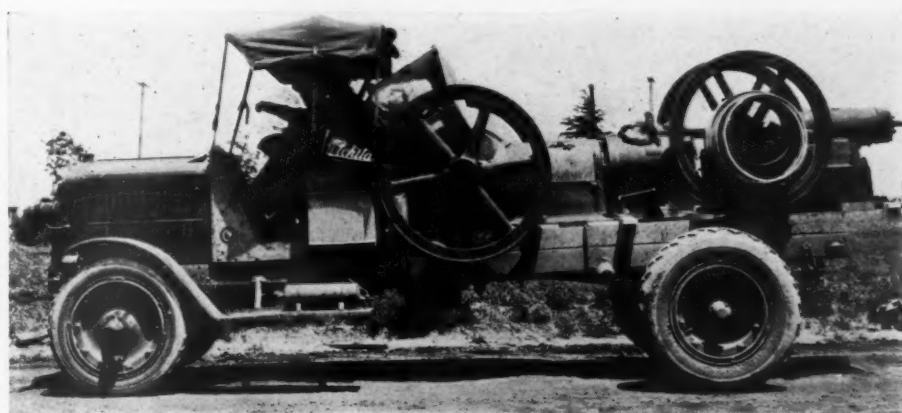
"I have 60 good horses and 6 International trucks. Everything equal, I can haul on a 5 to 6 mile basis, more gravel with the 6 trucks than I can with the 60 horses."

The personal comfort of the men who drive these trucks is also well taken care of, by having the trucks equipped with enclosed cabs to protect the men thoroughly in wet or cold weather. This feature of equipment also demonstrates another of Mr. Haney's firm convictions—that a man can work with greater efficiency when he is warm and comfortable than when he is using up a large part of his energy combating the discomforts of exposure to cold or rain.



This Two and a Half Ton Master Truck Traveled 14,000 Miles in Seven Months

The van body of this truck used by the Ivory Moving Corp., Detroit, Mich., weighs something over 2,500 lb.; is 14 ft. long behind the driver's seat; 6 ft., 6 in., wide; and 7 ft. high. This truck, a vital factor in the interurban moving schedule of this company, has made many long-distance trips, traveling on one occasion 300 miles in 24 hours.



Pneumatic Tire Equipment is Considered Most Efficacious for Getting Through Soft Places

Operators in oil and mining regions experience less difficulty with pneumatic as they do not sink as deep into the soft roads and afford better traction. This Wichita is on its way with a load of mining machinery from Wichita Falls, Texas, to Denver, Colorado

**one  
ton** \$**1195**  
(Chassis)

## *Why Forty Business Men Secured Ruggles Franchises in Ninety Days*

These experienced truck dealers were looking for an unusual truck that would give them leadership through superior quality and low price.

They found in the Ruggles franchise the outstanding opportunity to meet all competition—to build a permanent and profitable business.

They came to the Ruggles factory from Illinois, Ohio, Pennsylvania, Colorado, California, Wisconsin, Mississippi, Arkansas and many other states. *Not one dealer who ever visited the factory has failed to ask for a franchise.*

Ruggles quality is high. No truck in the world is more carefully built than the Ruggles. No other truck gives the same dollar-for-dollar service. The Ruggles offers:

- A price that gives you a big selling advantage while still maintaining rigid standards of quality and design.
- A company that is financially sound. You can rely on the permanence of a Ruggles franchise.
- An organization made up of experienced truck

# RUGGLES



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<b>two ton</b> (Chassis)	<b>\$1795</b>
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builders and transportation specialists headed by Frank W. Ruggles.

—A Franchise Plan that takes the needless risks out of truck selling. A sound, sane, progressive policy. New and tremendously effective selling ideas to help you.

You will want to know about the Ruggles truck, price and plan. It is the one truck franchise that enables you to secure and hold a dominating share of the truck business in your territory.

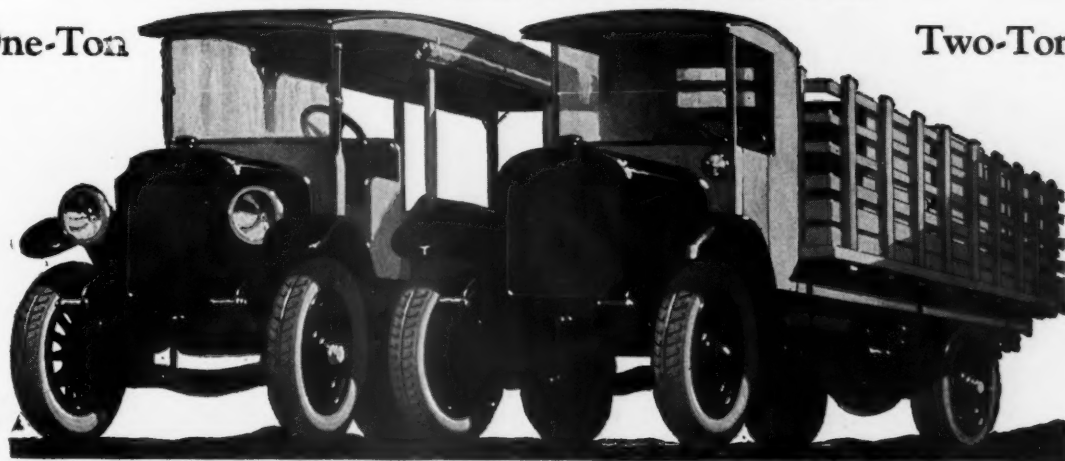
Write or wire today for the offer that sold forty dealers in ninety days.

## RUGGLES MOTOR TRUCK COMPANY

SAGINAW, MICHIGAN

Canadian Factory, Ruggles Motor Truck Co., Ltd., London, Ontario

One-Ton



Two-Ton

*The World's Greatest Truck Value*

# TRUCKS

## Personal Items

**Day Baker** succeeds Dwight W. Sleeper as secretary of the Motor Truck Club of Massachusetts, Inc. The annual election took place at the City Club, Boston, on February 16.

**A. C. Bergmann**, for the past two years general sales manager of the Sterling Motor Truck Co., Inc., of New York, has resigned to join the C. G. Spring Co., of Kalamazoo, Mich.

**Harrison H. Boyce**, general manager of the Moto-Meter Company, Inc., and E. V. Hennecke, sales manager, are making a tour of the entire country, investigating trade conditions in the automotive accessory field.

**William G. Brown** has resigned as Western sales manager of the American Bosch Magneto Co., to become general sales manager of the A. H. Peterson Mfg. Co., Milwaukee, Wis., manufacturer of portable electric drills and other tool specialties.

**Coker F. Clarkson** will represent the Society of Automotive Engineers on the Executive Committee of the American Engineering Standards Committee. The selection was made at a recent meeting in New York.

**Charles Hughes Connelly**, formerly Western sales manager of the Miller Rubber Co., has been announced as general sales manager of the Carlisle Tire Corp., of Stamford, Conn.

**O. Davison** has been named as manager for the San Francisco branch of the Mason Tire and Rubber Co.

**William P. De Vay** has been appointed to the position of purchasing agent of the Belden Manufacturing Co., 23rd St. and Western Ave., Chicago, Ill.

**J. H. Ficken** has joined the sales organization of the Howe Rubber Corp., New York City, as special sales representative. For seven years Mr. Ficken has been associated with the Kelly-Springfield Tire Co., in New York City.

**R. O. Gill** has been announced as factory manager of the Packard Motor Car Co., succeeding C. F. Tollzien. Mr. Gill has been with the company for four years and formerly held the position of production manager.

**Arthur E. Kelly**, for the last four years branch manager and export sales manager of the Spreckels Savage Tire Co., has severed his connections with that company.

**Martin E. Kern** has telegraphed his resignation as a director of the American Bosch Magneto Co., from Europe. Mr. Kern, a former banker of Allentown, Pa., figured in the purchase of the Bosch Co. from the alien property custodian.



**Frank L. Campbell**

New sales manager of the United States Chain & Forging Co., of Pittsburgh, Pa. One of the products of the company is the well-known McKay tire chain.

**John McConnell** has become affiliated with the United Alloy Steel Corp., of Canton, O., in the capacity of vice-president, according to a recent announcement.

**Fred Post** has joined the Standard Motor Truck Company's executive sales organization. He will supervise the distributing organization in the Central territory and make his headquarters at the factory.

**E. E. Warfield** has been appointed sales manager of the Gill Mfg. Co., Chicago. Mr. Warfield has a long service record, having been with Post & Lester, Motor Car Equipment Co., Wetmore Savage, and other well known jobbing houses.

**Fred D. Williams**, for the past three years general manager of L. H. Gilmer Co., of Philadelphia, has been made assistant to the president of the United & Globe Rubber Co., of Trenton, N. J.

## Factory News

**The Motor Wheel Corp.**, Lansing, Mich., reports a net operating profit for 1921 of \$599,590.45, cash assets of \$1,058,807.71, against total liabilities of \$273,691.48.

**The Autocar Co.**, of Ardmore, Pa., has increased its working schedule from 40 hours to 47 hours per week. The firm notes a gradually increasing need for additional transportation vehicles by some of the larger users of trucks.

**The India Tire and Rubber Co.**, of Akron, O., announces that during 1921 the firm has materially reduced its bank loans, wrote off losses on raw material and finished merchandise on hand exceeding \$400,000, and has greatly improved its financial position.

**Wharton Motors Co.**, Jenkins Arcade Bldg., Pittsburgh, Pa., has secured an option on a site in Johnstown, Pa., upon which will be erected a factory for the manufacture of passenger cars and trucks. The firm was organized in 1920 with a capital of \$5,000,000.

**The Transport Truck Co.**, Mount Pleasant, Mich., announces the re-election of the following officers: M. A. Holmes, president and general manager; H. E. Chatterton, vice-president and assistant general manager; A. E. Gorham, secretary-treasurer. Directors include the three above named and C. E. Hagan, E. J. McCall, D. A. Warner and F. W. Gargett.

## New Agencies

**The General Motors Truck Co.**, on Pontiac, Mich., has opened a direct factory branch at 534 S. Tryon St., Charlotte, N. C., for the distribution, sales and service of G. M. C. trucks in the Carolinas.

**The India Tire & Rubber Co.**, Akron, Ohio, has established a branch warehouse at 250 West 54th St., New York City, where a large stock of India products will be maintained. This is the sixth depot established in less than a year.

**The Federal Truck Co.**, of Detroit, has established a direct factory branch at San Francisco, furnishing sales and service for the entire Pacific coast. E. S. Jones is in charge of the sales department.

**The Motor Wheel Corp.**, Lansing, Mich., will open on April 1 a Detroit office with M. W. Taber, special representative, in charge. The office will be located at 601 Capitol Theatre Bldg., on Madison Ave.

**Republic Truck Sales Corp.** has opened a direct factory branch at 534 Fourth St., San Francisco. George E. Clark is manager of the branch.

**The H. A. Seller-Cummings Co.**, 1535 Van Ness Ave., San Francisco, Cal., will distribute Stewart trucks in the Coast district. The firm was formed by the consolidation of H. A. Seller Co. and Seller and Cummings.

**The Auto Equipment Co.**, of Denver, Colo., announces that it has leased a building at 130 N. Center St., Casper, Wyoming, and will open immediately a wholesale equipment branch. The firm expects to travel men through Northern Wyoming.

## Removals and Trade Changes

**The Stevenson Gear Co.** will locate a gear production plant at the present plant of the Michigan Pattern and Machine Co., 3429 Jefferson Ave., Detroit.

**The American Vulcanized Fiber Co.**, of Wilmington and Newark, Del., will be sold to the National Fiber and Insulation Co., for upward of \$1,250,000.

**The Parker Tire & Supply Co.**, the Good-year service station for San Francisco, has moved to its new location at 907 Post St., near Hyde.

**The Hauck Manufacturing Co.** has moved its Philadelphia office to 1726 Sansom St. Herbert Vogelsang, who has been with the company for six years, will be in charge.

**The Logan Machine Co.**, Logansport, Ind., will move its general sales offices from 9 South Clinton St., Chicago, to the factory, at Logansport. The Frank G. Payson Co., of Chicago, sales agents for the Logan Machine Co., has dissolved.

**The Tristate Ignition Co.**, Cincinnati, O., has taken over the entire business of the E. H. Silva Co. The company distributes Philadelphia storage batteries and specializes in starting and ignition work.

## New Incorporations

**Walter Rowan Battery Supply Co.**, 5426 Broadway, Chicago, Ill., has incorporated at \$10,000 as a jobber of battery supplies and equipment.

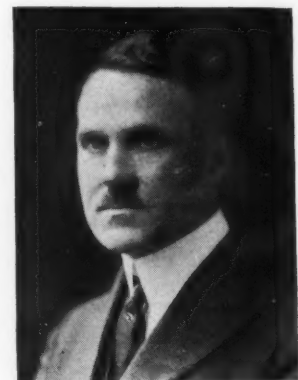
**The Triumph Motor Co.** has arranged for a plant at DuBois, Pa., and expects to manufacture motor truck machinery at an early date. Charles A. Meikle, Buffalo, president.

**The Mason Motor Truck Co.** has filed articles of association at Flint, Mich. The company will deal with automobiles, trucks, tractors, etc. The officers are Arthur C. Mason, president; F. I. Bromley, vice-president, and M. C. Day, secretary-treasurer.

**The Krebs Motor Truck Co.** has been organized at Bellevue, O., by J. C. L. Krebs, formerly of the Clydesdale Motor Truck Co. A plant will be established there.

**The Dextra Mfg. Co.** has been incorporated at Detroit, Mich., to deal in automobile accessories. Capitalization is \$75,000.

**The Mason Tire Co.** has been granted a charter to manufacture tires and tubes at Newark, N. J. Capital announced is \$125,000.

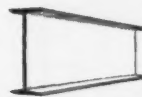


**C. H. Davies**

Who has resigned, after 16 years' connection with S. F. Bowser Pump and Tank Co., Fort Wayne, Ind., to supervise advertising and sales promotion with the Citrus Products Company, of Chicago.



# ROLLED STEEL TRUCK WHEELS



## A New Departure in Wheel Construction

*A truck wheel made from a rolled-steel I-beam! Catalogue RC tells all about the process. Sent free on request.*

## This Advertisement is Addressed to Builders of Motor Trucks

The motor truck that is equipped with units of outstanding superiority possesses a marked advantage over its competitors.

Such a truck carries the builder's guarantee and reputation, backed by the reputations of other national manufacturers.

The result is a powerful selling asset—because the truck so equipped holds out to the prospective buyer the certainty of more economical and lasting service.

The advantages of the Bethlehem Rolled Steel Truck Wheel register in the re-

sults it is giving day after day in the stiffest kind of truck service.

It is made of rolled steel—from a specially rolled I-beam—by a simple yet astonishing process. It unites the tremendous strength of rolled steel with the light weight of a wood wheel.

And quantity production, plus the economies peculiar to the process of manufacture, make it possible to turn out the Bethlehem Rolled Steel Truck Wheel at a price really interesting to truck builders.

*Send Today for Catalogue RC*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Sales Offices: New York  
Boston

Philadelphia  
Baltimore

Washington  
Atlanta

Pittsburgh  
Cleveland

Detroit  
Chicago

St. Louis  
San Francisco



# BETHLEHEM

## Obituary

**William C. Sargent**, for 22 years secretary and also a director of the Chain Belt Co., Milwaukee, died suddenly as a result of heart failure. He was 73 years of age and has been in ill health for several years. Mr. Sargent, prominent in industrial circles of Milwaukee and St. Paul had a wide national acquaintanceship. He established many of the early business connections of the Chain Belt Co., many of which are still among the company's jobbers.

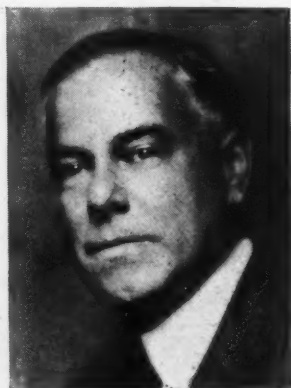
**John J. Voorhees**, president of the Voorhees Rubber Manufacturing Co., of Jersey City, died at his home in New York City, 73 years of age. In 1875 Mr. Voorhees became connected with the Jersey City Car Spring & Rubber Co., of which he eventually became treasurer and general manager. He later formed his own company, associating himself with his two sons. He has held a number of public offices and has interested himself largely in public affairs.

**Daniel R. Walls**, advertising manager for the Splitdorf Electrical Co. for 16 years, died February 18, as a result of exhaust gas poisoning. He was overcome in his garage where his car was standing with the engine running. Mr. Walls was 49 years of age and leaves a wife and daughter.

## Smith Succeeds Willys as Head of Republic Truck

With the resignation of John N. Willys from the presidency of the Republic Motor Truck Co., Inc., of Alma, Mich, control passes into the hands of Western interests centered in Michigan and Illinois. Mr. Willys is succeeded by Col. Frank E. Smith, who came to the company November, 1920, as vice president and general manager.

Other changes in the company include the resignation of Walter P. Chrysler, director and a member of the executive committee and of James E. Kepperley, also of the executive committee. Direc-



**Col. Frank E. Smith**

Who succeeds John N. Willys to the presidency of the Republic Motor Truck Co., Inc.

tors elected to fill these vacancies were O. W. Hays, H. D. Minich and Charles G. Rhodes. Both Mr. Hays and Mr. Minich become vice presidents while Mr. Rhodes assumes the duties of secretary.

The resignation of H. I. Shepherd as treasurer of the company was accepted but he will continue as a director as will also W. J. Baxter, until their successors can be determined upon. Mr. Shepherd is reported to be joining the organization

of one of the large Cleveland banks. It is understood that the relinquishment of control by Mr. Willys is occasioned by his having so many other interests, particularly Willys-Overland, which will take practically all his time.

## Truck Sales Reported Better at N. A. C. C. Meeting

New York, March 2.—At the quarterly meeting of the motor truck members of the National Automobile Chamber of Commerce today, reports on sales were made which showed that the truck business was improving gradually. In Chicago truck sales had increased 25 per cent. January production was 38 per cent better than December.

At the general meeting of the truck members it was unanimously voted to adopt the recommendations of the Truck Standards Committee as follows:

1. That the standard caution plate adopted by the Chamber in 1912 is more suitable for present requirements than any other form of plate.
2. That a more general use of this plate should be made and that space provided for weights should be actually filled in.
3. That the manufacturer should recommend to the State Motor Vehicle Commissioner that no license be issued for a

motor vehicle unless weights are properly filled in on plate at time of application.

R. O. Patten, Manager, Truck Sales Division, Pierce-Arrow Motor Car Company, proposed that truck sales questions and answers be standardized to give the buying public a more rounded viewpoint of truck utility. It is expected that many of the members will follow out this suggestion.

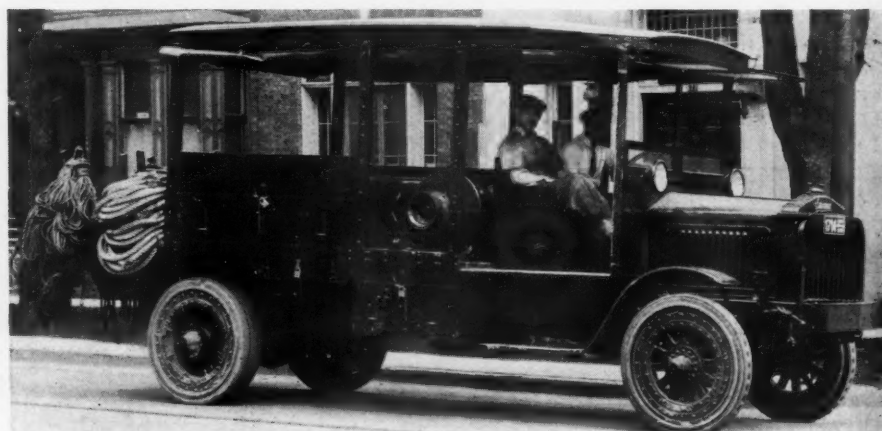
It was reported that the American Electric Railway Association has been giving considerable study to the possibilities of the motor bus. The New England Street Railway Club has already recommended to its members that motor bus service is preferable as an auxiliary in many instances. This is believed to definitely mark the turning point of the electric railway industry in favor of buses.

Facts presented by F. W. Fenn, Secretary, to the members of the Automobile Club of Canada, at Montreal, and to the Ministers of Highways and Finance at Quebec resulted in the drawing up of a new bill to permit a maximum dead weight (vehicle and load combined) for any truck of 24,000 pounds.

The N. A. C. C. will soon issue a booklet on driver civility. It was felt that a more general understanding of the courtesies of the road would bring about fewer accidents and impress upon motor truck drivers the importance of yielding the right of way to faster moving vehicles.



**FWD Truck and Trailer Used for Hauling Logs to Their Mills by the Ashley Lumber Company, Hamburg, Arkansas**



**This Standard Job Was Designed With Special Winch and Provisions to Make It Most Utilitarian in the Field of Service in Which It is Engaged**

The winch has a single line pull of 10,000 lb. and is operated from the left side of the seat by the driver. Power is taken from the transmission through a power-take-off attachment. Provision is made for separate locked drawers for storing tools and equipment necessary for quick repair work. Seats are provided for carrying extra workmen from one job to another. Side and rear curtains permit complete enclosure of body against inclement weather.





## Only a half-inch wear in 20,000 miles

It would be difficult for us to write anything about Caterpillar tires half so convincing as the following letter from The Paraffine Companies, Inc., of San Francisco.

"We are sending to you photograph of our two-ton White Truck, which you will note is equipped with your Caterpillar Cushion Tire on the rear.

"This truck has covered approximately 20,000 miles in the past twenty months and these tires have so far worn down a scant half inch and show no signs of cupping.

"We are glad to express our satisfaction at the service these tires are giving us, not only as to the mileage—but cushion and the traction."

These people have used Caterpillars and speak from their own experience. They tell you not what Caterpillars are supposed to do but what they have actually done in service—and what you may expect them to do for you.

*Made in sizes suitable for trucks of  
every type and weight*

## Kelly-Springfield Tire Co.

GENERAL SALES DEPARTMENT

1710 BROADWAY

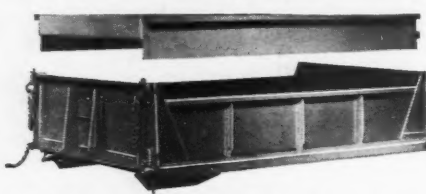
NEW YORK



# The Most Complete Line of DUMP BODIES, HOISTS AND TANKS IN AMERICA



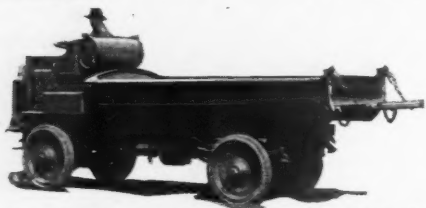
**2 in 1 Combination Body.** The double-acting tail gate now standard on all Heil Bodies is in lowered position. The sides are removed so that lumber, beams, pipe, cement, etc., can be hauled to advantage.



**4 in 1 Combination Body** showing the front, rear and upper sides removed. Two sets of sides, coal capacity; one set of sides, gravel capacity.



**Combination 4-7 Yard Body and Hydro Hoist.** Hoist can be mounted on any make or model of truck. Simple, dependable, efficient, nothing to get out of order.



**Standard Dump Body Model RFC** fitted with Hydro Hoist. Notice that all the loading space back of the cab is utilized. Or

**Compartment Truck Tanks.** 250-2000 gallons capacity. Shapes elliptical, round or semi-rectangular. Electrically welded throughout. Furnished complete ready for mounting on truck.



**Gravity Dump Body.** Dumping angle 80 degrees. Body is electrically welded to make it water tight. Simple operating mechanism. One yard body complete with U-bolts. Sells for \$100.00.

## For the Chassis That's on Your Show Room Floor

It often happens that you have a call for special body equipment to be mounted on a chassis you have in stock. Your customer may be in a hurry. Perhaps you want to move a particular chassis, or maybe your Service Department is slack and you want a mounting job for it.

Whatever the reason we can furnish the equipment on short notice. We carry more than 250 dump bodies of various types in stock. If it is a special job it can be built in two or three days in our big, new plant.

## Reduced Prices

Heil's "Quality" Equipment at new reduced prices will help sell your trucks. Heil Equipment is well-known to road contractors, municipal officials, coal dealers, oil marketers and others through extensive national advertising.

We will be glad to send you our new, complete catalog together with prices and discounts. It contains tables of body dimensions, weights, illustrations and construction details on Combination, Standard, Asphalt, and Garbage Dump Bodies, Hydro Hoists, Hand Hoists, Gravity Dump Bodies and Compartment Truck Tanks. It's a valuable reference book and it's free for the asking. Write for your copy of Catalog No. 120 complete.

There are a few attractive territories open for Distributors. Write for proposition.

### THE HEIL CO.

1143 MONTANA AVE.

MILWAUKEE, WIS.

**DISTRIBUTORS:** 2718-20 Wentworth Ave., Chicago  
21st and Virginia Ave., Washington, D.C.  
Pelham and St. Anthony Ave., St. Paul  
1851 E. 38th Street, Cleveland  
437-451 Fourth Street, San Francisco  
136 West 55th Street, New York City  
1806 West Broad Street, Richmond  
612 West 7th Street, Sioux City, Ia.





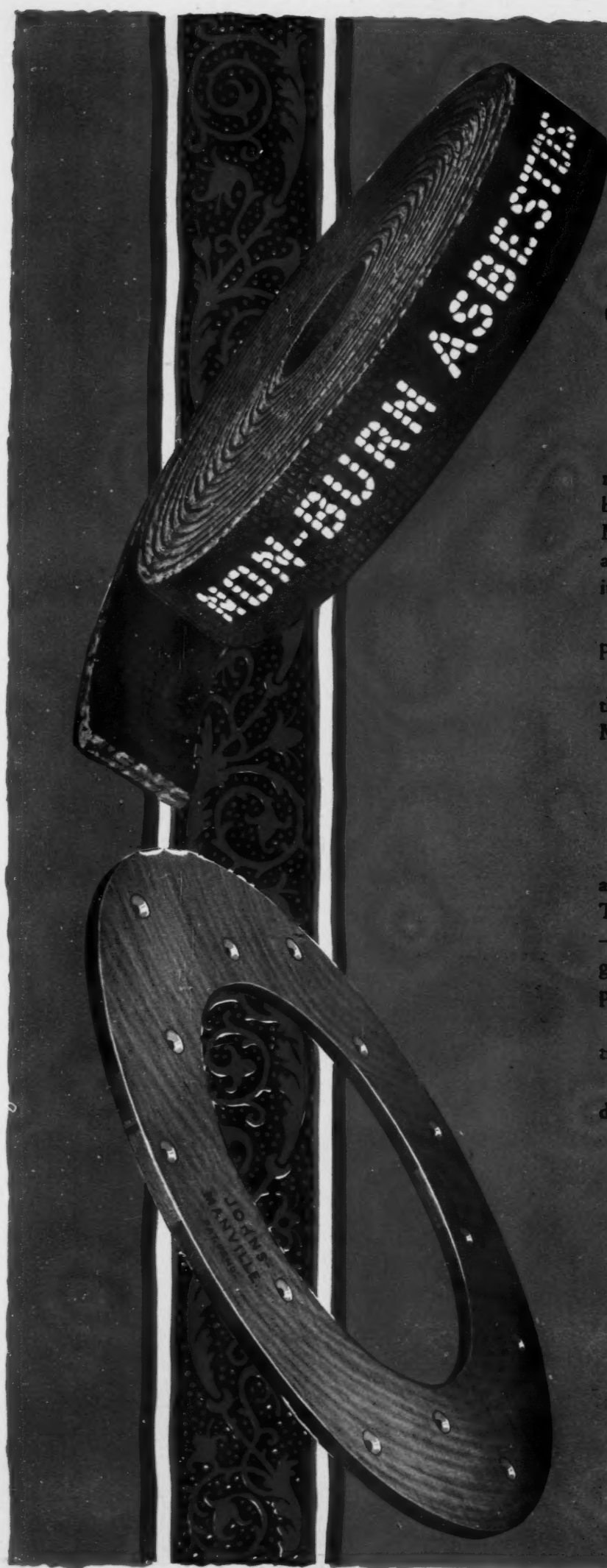
## Your curbstome— another counter

THE tradesman across the street would give a good deal if people stopped at his place the way they do at yours. You're lucky! Think of the number of cars that stop every day at your curbstome for gas, oil or air. Every one of them is a prospect for some accessory. Courteously suggest and demonstrate to the owner the accessories you sell.

You'll be surprised how often he is actually thankful for your interest. You won't have to ask him to buy if you show him what he wants.

# JOHNS~ MANVILLE

*Automotive  
Equipment*



## The leader of the line

*Johns-Manville Non-Burn Asbestos Brake Lining* must be kept up in quality. It is the connection between the motoring world and the great Johns-Manville Asbestos Industries. Our reputation as asbestos specialists is dependent upon the service it gives.

So you see it is for a good reason that only prime asbestos fibre is woven into Non-Burn.

Which justifies our claim in national advertising that "brakes are safer and last longer with Johns-Manville Non-Burn Asbestos Brake Lining."

## A new one

*Johns-Manville Asbestos Friction Clutch Facings* are unlike any other facing you have ever used. They are made from a special asbestos compound — highly compressed — accurately sized by surface grinding — drilled and countersunk — made for practically all standard cars having disc clutches.

Garagemen will appreciate the great saving of time in application.

Car owners will be surprised at their tremendous gripping power and wear resistance.



## A silent salesman

The *Johns-Manville Speedometer* for Ford cars is probably the most dependable instrument of its kind on the market. Designed and carefully made to meet long, hard service. You can depend upon it year after year. Easy to attach to the Ford instrument board. Catalogue No. 3020.

## A sturdy accountant

The *Johns-Manville Hub Odometer* enables the owner to keep accurate track of his truck costs. It records actual mileage whether the wheels go forward or backward. It is simple in construction and cannot be tampered with.

## For a tight place

Use one of the two *Johns-Manville Automotive Sheet Packings*.

*Seigelite Sheet Packing*, for gasketing against water, oil or gasoline.

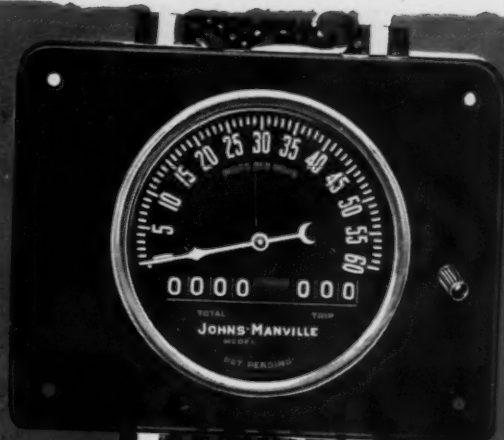
*Service Sheet Packing*, for high heat temperatures.

## An attractive display

*Johns-Manville "Noark" Automobile Lighting Fuses* are packed in cartons containing both glass and fibre tubes. They may be depended upon to protect the electrical equipment of your customers' cars.

## Sticky!

*Johns-Manville Automobile Tape* is permanently adhesive. It is guaranteed not to dry out. It is strong and will not fray.



# CHOOSE YOUR DISTRIBUTOR

## Alabama

The I. J. Cooper Rubber Co., Birmingham  
Moore-Handley Hardware Co., Birmingham  
Johnson Tire & Auto Co., Montgomery

## Arkansas

Crow-Burlingame Co., Little Rock

## California

Chandler & Lyon Co., Fresno  
Chandler & Lyon Co., Los Angeles  
Featherstone, E. A., Los Angeles  
McCoy Motor Supply Co., Los Angeles  
Waterhouse & Lester Co., Los Angeles  
Weinstock-Nichols Co., Los Angeles  
Chandler & Lyon Co., Oakland  
Kimball-Upson Co., Sacramento  
P. W. Gavin Company, Inc., San Diego  
Chandler & Lyon Co., San Francisco  
Electric Appliance Company, San Francisco  
McCoy Motor Supply Co., San Francisco  
Waterhouse & Lester Co., San Francisco  
Weinstock-Nichols Co., San Francisco  
California Auto Supply Co., Stockton

## Colorado

Auto Equipment Co., Denver  
Foster Auto Supply Co., Denver  
Motor Accessories & Tire Co., Pueblo

## Connecticut

Hessel & Hoppen Co., New Haven  
Motor Tire Service Co., Putnam

## District of Columbia

National Electrical Supply Co.  
Rubel, Chas., & Co.

## Florida

Baughman Company, G. Norman, Jacksonville  
Baughman Company, G. Norman, Miami  
Baughman Company, G. Norman, Tampa

## Georgia

Alexander-Seewald Co., Atlanta  
Osburn-Abston & Co., Atlanta  
The I. J. Cooper Rubber Co., Atlanta  
Cody Co., W. E., Columbus

## Illinois

Automobile Supply Co., Chicago  
Chicago Automobile Supply House, Chicago  
Electric Appliance Company, Chicago  
John C. Hoot Co., Chicago  
Motor Car Supply Co., Chicago  
Sheridan Auto Supply Co., Chicago  
The I. J. Cooper Rubber Co., Chicago  
Tenk Hardware Co., Quincy  
Washington Auto Supply Co., Washington

## Indiana

Orr Iron Co., Evansville  
Lomont & Co., Ft. Wayne  
The Gibson Co., Indianapolis  
The I. J. Cooper Rubber Co., Indianapolis

## Iowa

Cedar Rapids Pump Co., Cedar Rapids  
Sieg Co., Davenport  
Herring Motor Co., Des Moines  
Repass Auto Co., Waterloo

## Kansas

The Frank Colladay Hardware Co., Hutchinson  
Watson-Weldon Co., Salina  
Southwick Auto Supply Co., Topeka  
Massey Hardware Company, Wichita

## Kentucky

Peaslee-Gaulbert Co., Louisville  
The I. J. Cooper Rubber Co., Louisville

## Louisiana

Electric Appliance Company, New Orleans  
Shuler Auto Supply Co., New Orleans

## Maine

Bigelow & Dowse Co., Bangor  
The Farrar-Brown Company, Inc., Portland  
Thompson & Hoague Company, Portland

## Maryland

Auto Supply Co., Baltimore  
Coggins & Owens, Baltimore

## Massachusetts

Bigelow & Dowse Co., Boston  
Linscott Supply Co., Boston  
Motor Tire Service Co., Fitchburg  
Bigelow & Dowse Co., Springfield  
Duncan & Goodell Co., Worcester  
Motor Tire Service Co., Worcester

## Michigan

Bowman Gould Co., Detroit  
Roehm & Davison, Detroit  
Tisch Auto Supply Co., Grand Rapids

## Minnesota

Kelley-Duluth Co., Duluth  
Minneapolis Iron Store Co., Minneapolis  
Reinhard Bros. Co., Minneapolis  
Williams Hardware Co., Minneapolis  
Nicols, Dean & Gregg, St. Paul

## Missouri

Joplin Supply Co., Carthage  
Joplin Supply Co., Joplin  
The Faeth Company, Kansas City  
Ayers Farmer Auto Supply Co., St. Joseph  
Beck & Corbitt Iron Co., St. Louis  
Fred Campbell Auto Supply Co., St. Louis  
Geller, Ward & Hamer, St. Louis  
Joplin Supply Co., Webb City

## Montana

Northwestern Auto Supply Co., Billings

## Nebraska

Nebraska Bulck Auto Co., Lincoln  
Western Auto Supply Co., Omaha

## Nevada

Nevada Auto Supply Co., Reno

## New Jersey

Economy Auto Supply Co., Newark

## New York

Albany Hardware & Iron Co., Albany  
Martin Evans Co., Brooklyn  
H. D. Taylor Co., Buffalo  
Barker, Rose & Clinton Co., Elmira  
Weaver-Ebling Auto Co., New York City  
Pruden Hardware Co., W. E., New York City  
Whitmore-Sim Co., Inc., New York City  
Clancy Hardware Company, Syracuse

## North Carolina

Carrollinas Auto Supply House, Charlotte  
Automobile Supply Co., Wilmington

## North Dakota

Grant-Dadey Company, Fargo

## Ohio

The Penn. Rubber & Supply Co., Akron  
C. & D. Auto Supply Co., Cincinnati  
The I. J. Cooper Rubber Co., Cincinnati  
The Penn. Rubber & Supply Co., Cincinnati  
The I. J. Cooper Rubber Co., Cleveland  
The Penn. Rubber & Supply Co., Cleveland  
The I. J. Cooper Rubber Co., Columbus  
The Penn. Rubber & Supply Co., Columbus  
Justus & Parker Co., Columbus  
The I. J. Cooper Rubber Co., Dayton  
The I. J. Cooper Rubber Co., Toledo  
The Penn. Rubber & Supply Co., Toledo  
The Penn. Rubber & Supply Co., Youngstown

## Oklahoma

Joplin Supply Co., Commerce  
Severin Tire & Supply Co., Oklahoma City  
Joplin Supply Co., Tar River  
Tulsa Motor Supply Co., Tulsa

## Oregon

Wiggins Company, Inc., Portland  
Chandler & Lyon Co., Portland  
Waterhouse & Lester Co., Portland

## Pennsylvania

Motor Accessories Co., Allentown  
General Motor Supply Co., Altoona  
The Penn. Rubber & Supply Co., Erie  
Front Market Motor Supply Co., Harrisburg  
General Auto Supply Co., Harrisburg  
Johnstown Auto Co., Johnstown  
General Auto Supply Co., Lancaster  
The Penn. Rubber & Supply Co., Oil City  
Berroldin Rubber Co., Philadelphia  
Gaul, Derr & Shearer Co., Philadelphia  
Roberts Electric Supply Co., H. C., Philadelphia  
Dyke Motor Supply Co., Pittsburgh  
Jackson Motor Supply Co., Pittsburgh  
Lansing Bros., Inc., Scranton  
General Auto Supply Co., York

## Rhode Island

Belcher & Loomis Hardware Co., Providence

## South Carolina

Franke Co., Inc., C. D., Charleston  
D. W. Alderman, Jr., Inc., Florence

## South Dakota

L. & L. Motor Supply Co., Sioux Falls

## Tennessee

Southern Auto Supply Co., Chattanooga  
The I. J. Cooper Rubber Co., Knoxville  
The I. J. Cooper Rubber Co., Memphis  
Osburn-Abston & Co., Memphis  
Auto Supply Co., Nashville  
The I. J. Cooper Rubber Co., Nashville

## Texas

Electric Appliance Company, Dallas  
Ferris-Dunlap Co., Dallas  
Tri-State Accessories Corp., El Paso  
The Equipment Company of Texas, Fort Worth  
Meyer Co., Jos. F., Houston  
The Southern Equipment Co., Houston  
The Southern Equipment Co., San Antonio  
McCauley-Ward Motor Supply Co., Waco

## Utah

Inter-Mountain Electric Co., Salt Lake City  
Motor Mercantile Co., Salt Lake City

## Virginia

Owens-Merritt, Danville  
Piedmont Hardware Co., Danville  
Crump Co., Benj. T., Richmond  
Meadows-Price Co., Roanoke

## Washington

Chandler & Lyon Co., Seattle  
Reynolds & Reynolds, Seattle  
Chandler & Lyon Co., Spokane  
Holley-Mason Hardware Co., Spokane  
Chandler & Lyon Co., Tacoma  
Reynolds & Reynolds, Tacoma

## West Virginia

Williams Hardware Co., Clarksburg

## Wisconsin

Andrae & Sons Co., Julius, Milwaukee  
Shadbolt & Boyd Iron Co., Milwaukee  
Tisch Auto Supply Co., Milwaukee  
Western Motor Supply Co., Milwaukee

## CANADA

### Alberta

Motor Car Supply Co., Calgary  
The Chapin Co., Ltd., Calgary  
Wood, Vallance & Adams, Ltd., Calgary  
Motor Car Supply Co., Edmonton  
Marshall Wells Co., Limited, Edmonton

### British Columbia

Wood, Vallance & Leggat, Ltd., Vancouver

### Manitoba

Wood, Vallance, Ltd., Winnipeg

### Ontario

Whites, Limited, Collingwood  
Wood, Alexander & James, Hamilton  
James Cowan, London  
Just Motors Limited, Ottawa  
Wood, Alexander & James, Toronto  
Bowman Anthony Co., Windsor

### Saskatchewan

Wood, Vallance, Limited, Regina

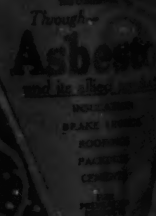
### Quebec

Omer De Serres, Montreal

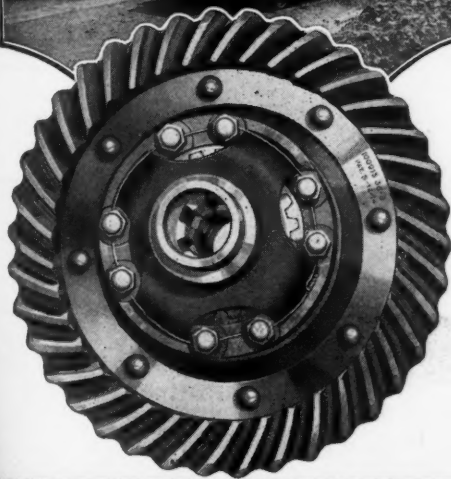
JOHNS-MANVILLE Inc., Madison Ave., at 41st St., New York City

Branches in 60 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto







To give a good account of itself in every day work a truck must be built with dependable parts.

The trucks illustrated — (they have Brown-Lipe-Chapin Differentials) — have stood up and taken the hard blows and long pulls of heavy hauling.

Differentials that withstand this unusual treatment without making their presence known can be relied upon to make light of ordinarily severe service.

# BROWN-LIPE-CHAPIN DIFFERENTIALS

# BROWN-LIPE-GEAR TRANSMISSIONS

Both at Syracuse N.Y.

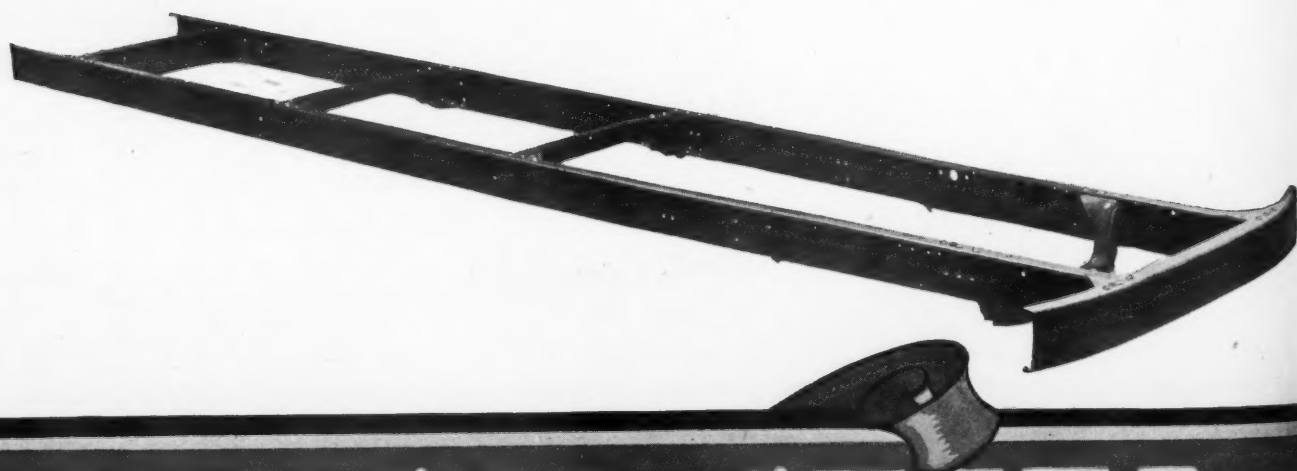


# PARISH &

## PRESSED STEEL FRAMES

Axle Housings  
Brake Drums  
Step Hangers  
Torque Arms

Engine Pans  
Axle Housing  
Covers  
Running-Boards



# PRESSED STEEL



Parish & Bingham Corp.



# BINGHAM

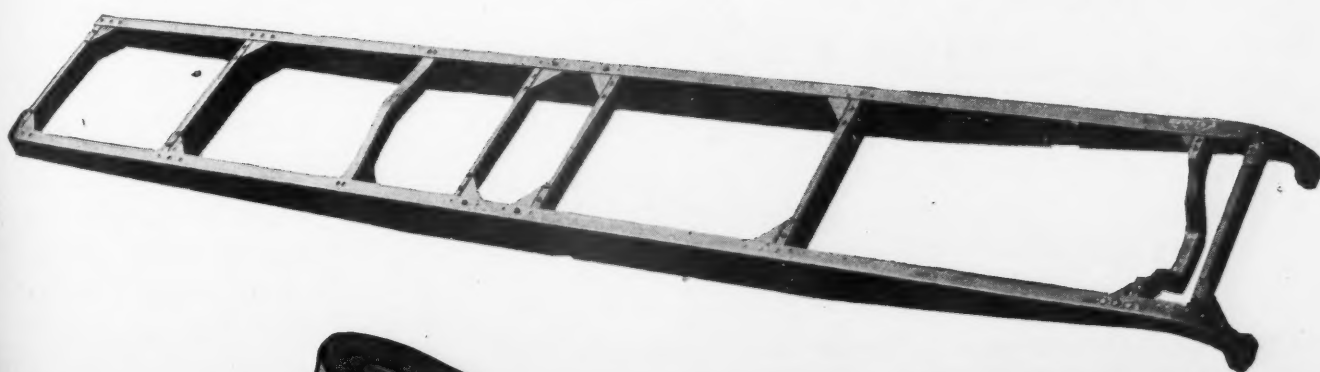


*for*

**PASSENGER CARS**

**TRUCKS**

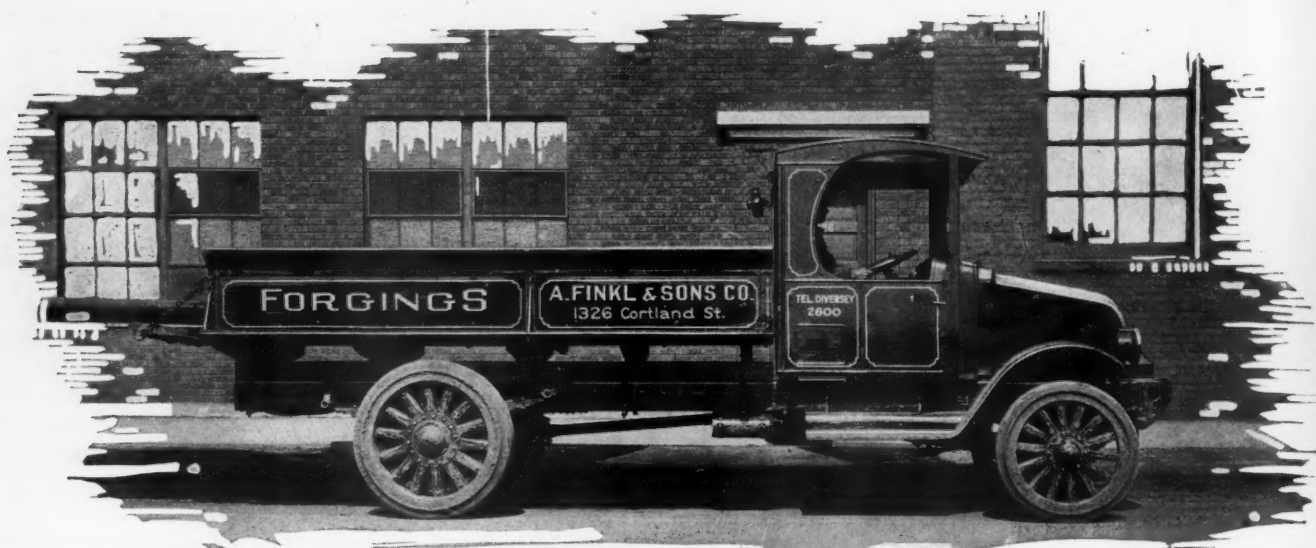
**and TRACTORS**



# FRAMES

**Cleveland Ohio, U.S.A.**

**Cleveland**  
Fifth City



## International Motor Trucks an Outstanding Success From Dealer's and Owner's Point of View

**P**ROSPECTIVE dealers in high-grade motor transportation will find it decidedly worth their while to make a study of the present full line of International Motor Trucks, and of the Service that goes with these trucks.

Internationals are today at work throughout the length and breadth of the land. Their practical hauling merit has achieved for them a phenomenal popularity in all lines of business. *Dealers have shared in this success.*

In the important matter of after-sale co-operation, we maintain that International Service has been developed to a degree of usefulness *absolutely unequalled*. Owners of Internationals are assured that their

trucks will be kept right through our inspection service, whereby road engineers from our many branches inspect trucks regularly without cost. This policy, carried out faithfully to the letter, creates loyalty and brings buyers. *The dealer shares the fruits of this policy.*

The Full Line of Internationals, ranging from the 1,500 lb. Speed Truck to the 10,000 lb. heavy-duty unit, comprises eleven sizes, with bodies and equipment for all requirements. At present prices the Line offers to *all* buyers the maximum in *low-cost transportation*.

Many dealers have found in the International Motor Truck contract the road to profitable, substantial success. May we send you further details. Write to the Chicago Office.

### INTERNATIONAL HARVESTER COMPANY

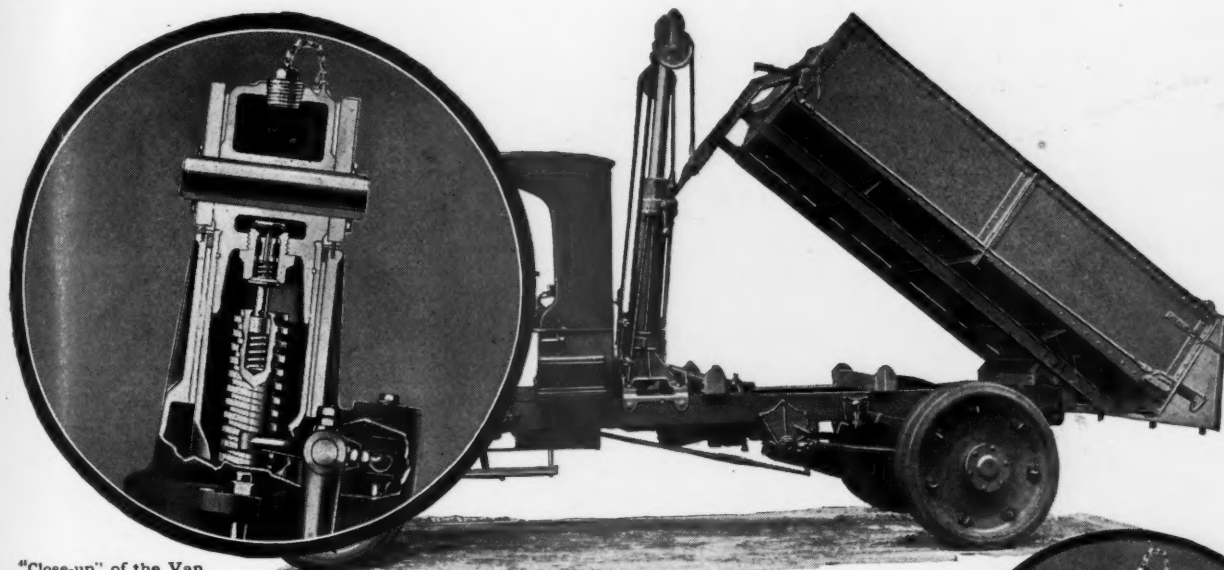
OF AMERICA  
(INCORPORATED)

CHICAGO

Branch Houses in 92 Principal Cities

U S A





"Close-up" of the Van Dorn automatic lubricating mechanism

## You Can't Go Wrong On Lubrication

**T**HE Van Dorn Mechanical Hoist is built to operate with the utmost simplicity and needs little care.

The one attention needed comes *only after every 200 operations of the hoist*, and consists in draining the used lubricating oil from the base of the hoist, and pouring one quart of lubricating oil into a reservoir at the top.

### How the Hoist is Lubricated

Positive lubrication, is automatically assured at every operation of the hoist. A tiny measuring receptacle (capacity

1-200th of a quart) is placed at the bottom of the reservoir located at the top of the hoist.

When the body is resting on the chassis the upper valve of this cup stands open. When the body is raised this valve closes and a valve in the bottom of the cup opens to let this scientifically gauged "shot" of oil flow over all working parts.

As the body is pulled down this lower valve closes and the top valve opens to permit refilling of the measuring device, ready for the next operation.

There can be no waste of oil. All moving parts are always protected against wear by a film of fresh, clean lubricating oil.

Bulletin illustrating and explaining the principle and operation of Van Dorn Mechanical Vertical and Horizontal Hoist sent to any truck operator on request. Write

**THE VAN DORN IRON WORKS COMPANY**  
Cleveland

Branches 324 William St., Long Island City, N. Y.  
and 451 Bourse Bldg., Philadelphia  
Distributors in all other cities

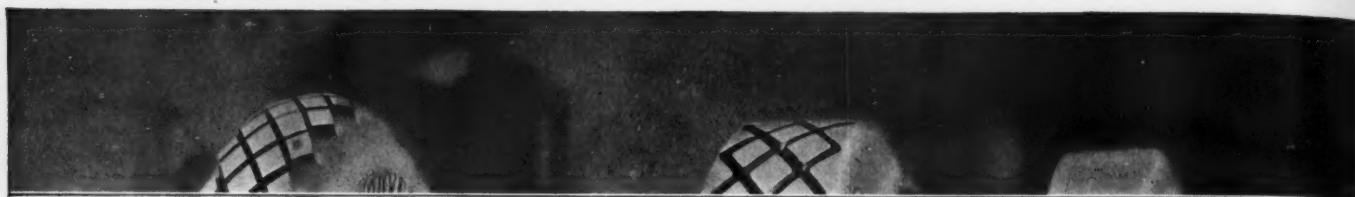


Cut away view of the hoist, showing the screw-jack principle of operation. Everything automatic. No weather troubles or replenishing of liquid. No body slipping, tilting or settling.

# Van Dorn

Mechanical Dump Truck Hoists:  
Bodies; Frames; Pressed Parts





## DOES YOUR DEALER SELL GOODYEARS?



Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

**T**HE Goodyear Dealer will sell you the right tire for your truck. His line of truck tires is complete, covering the entire range of hauling conditions.

He knows the work for which each particular type of tire is best suited, and from his wide experience with many kinds of trucking, he can help you choose the one that will serve you longest and best.

The Goodyear Truck Tire Dealer never forgets that tire performance is a big factor in the economical operation of a truck, and his one aim in recommending a particular Goodyear Truck Tire to you is to reduce your truck operating costs by keeping your tire mileage high and your tire cost low.

His stock is ample at all times to supply

regular demands and emergency needs.

He has the necessary facilities for applying the tire quickly and correctly.

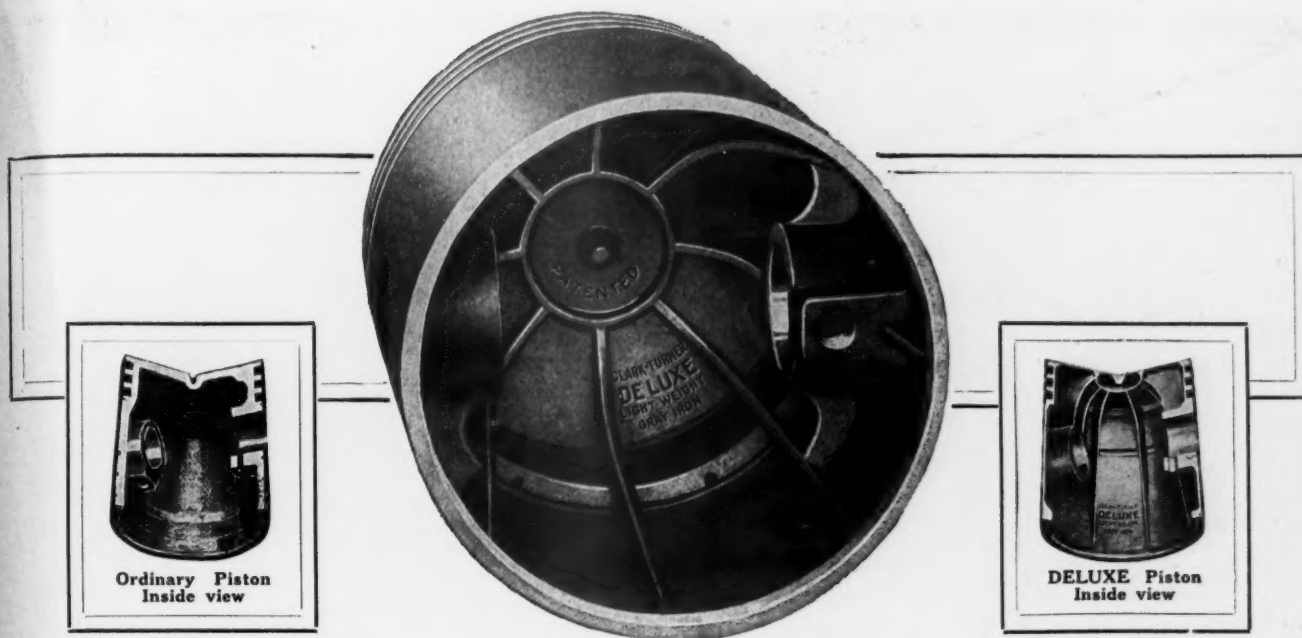
He has the means and the knowledge to give Goodyear Service on Goodyear Tires, and he is *willing* to do so, watching over the performance and condition of the tires throughout their long life, and suggesting the best way to use them and care for them so as to bring out *in your service* their lower cost per tire mile.

Get acquainted with the Goodyear Dealer. Have him show you his complete line of Goodyear Truck Tires—Goodyear Cords, Goodyear All-Weather Tread Solids, Goodyear Smooth-Surface Solids, and Goodyear Cushion Tires. Equip your truck with efficient and economical Goodyear Tires.

GOODYEAR







# Both Sides of the Piston Question

*A true account of how DELUXE Pistons make good*

## *Why Ordinary Pistons Are so Heavy*

Ordinary pistons are heavy because, owing to their design, a large amount of metal is required to give them the necessary strength.

When this excess weight of metal is traveling up and down in the cylinders it *Wastes Power* in proportion to the square of its speed,—(Twice the speed means four times as much power wasted)—power that should be delivered to the rear wheels.

The vibration is excessive in proportion to weight and speed. The oil consumption is in proportion to clearance and weight. More gas is required to stop and start excessive weight.

Ordinary stock factory cast pistons cannot be fitted close with any degree of safety, as they radiate the heat of the explosion slowly, hence expand considerably and are apt to bind or score the cylinders.

And if they *are* fitted loosely, they permit oil pumping, gas leakage and noisy piston slap.

Ordinary pistons are heavy because until DELUXE pistons were made the only way to get a light piston was to use aluminum or alloys.

***All Good Things Are Imitated, but Look Inside for the Name "DELUXE." It is there for Your Protection.***

Dealers and repair men all over the country are making money and satisfied customers with DELUXE pistons. They are cashing in on our nation wide advertising, including the Saturday Evening Post, and are following it up with profitable sales efforts of their own.

Write or wire us at once for details or ask our nearest distributor, listed in Chilton's Automobile Trade Directory, The (Red) Automobile Trade Directory or Might's Canadian Automotive Directory.

DELUXE pistons and core-boxes for making the same are thoroughly protected by U. S. and

**DELUXE**  
LIGHT WEIGHT CAST IRON PISTON  
The Successful Light Weight Piston ©

Patented and Manufactured by

**Clark-Turner Piston Company**  
LOS ANGELES INCORPORATED CALIFORNIA

## *The Inside Story of DELUXE Pistons*

Look inside a DELUXE piston. See the scientific reinforcing ribs extending down the inside and across the head of the piston to a reinforcing ring. Notice how thin the walls are.

A DELUXE lightweight cast iron piston is so designed that although only about half as much metal is used as in ordinary pistons, it is actually stronger where strength is needed.

A DELUXE piston, because it is 40 to 50% lighter than ordinary stock factory cast pistons, makes a motor far more powerful, flexible and speedy.

Look at the re-inforcing ribs again. Each one of them radiates heat rapidly. There is more than twice the heat radiating area inside a DELUXE piston. This means a cool running motor, but what is more important, it means that DELUXE pistons can be fitted very close, as they expand only a very little—and at the same rate as the cylinder walls.

DELUXE pistons, therefore, eliminate gas leakage, oil pumping and piston slap. DELUXE equipped motors run with practically no vibration, hence with very little upkeep expense.

foreign patents. We intend to vigorously defend our rights and prosecute all infringers.



# No Car Is Quite Itself without a Concrete Road

What makes a "crack" train? The roadbed as much as the rolling stock.

So with your automobile. Any car is a *better* car on a good road.

The car with the highest gas mileage has a *higher* mileage on Concrete.

The car with the quickest "pick-up" picks up *quicker* on firm, unyielding Concrete.

The best non-skid tire holds *better* on the gritty Concrete surface.

The car with the lowest depreciation has a *lower* depreciation on Concrete.

Motorists know these are facts—and motorists, if they insist, can get the kind of roads they want.

*Our Booklet R-3 tells other interesting things about Concrete roads. Write for your copy.*

## PORTLAND CEMENT ASSOCIATION

*A National Organization  
to Improve and Extend the Uses of Concrete*

Atlanta	Des Moines	Los Angeles	Parkersburg	San Francisco
Boston	Detroit	Milwaukee	Philadelphia	Seattle
Chicago	Helena	Minneapolis	Pittsburgh	St. Louis
Dallas	Indianapolis	New York	Portland, Oreg.	Vancouver, B. C.
Denver	Kansas City		Salt Lake City	Washington, D. C.



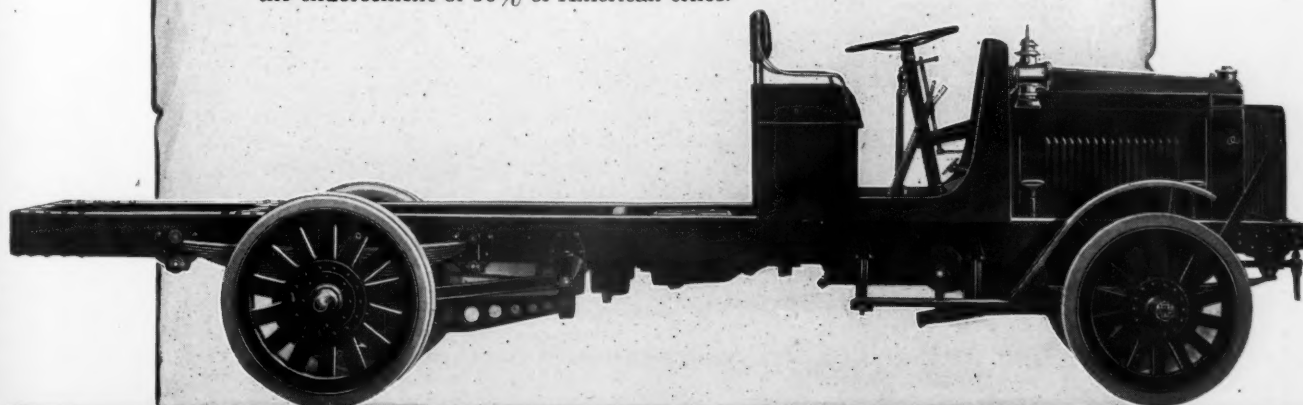


The Logical Reason  
for  
American-LaFrance Commercial Trucks

A noted statistician recently said that the products which would be successful this year were those with a logical reason for existing.

American-LaFrance Commercial Trucks have a logical reason for existing, because they will answer the demand for a commercial truck that will give the maximum amount of uninterrupted day-in and day-out service at a minimum cost.

This is assured by the fact that they are designed by the same engineers who, for fifteen years, have designed American-LaFrance Motor Driven Fire Apparatus which, by its constant readiness for service, strength, power and stamina, has won several world's records for endurance, and the endorsement of 90% of American cities.

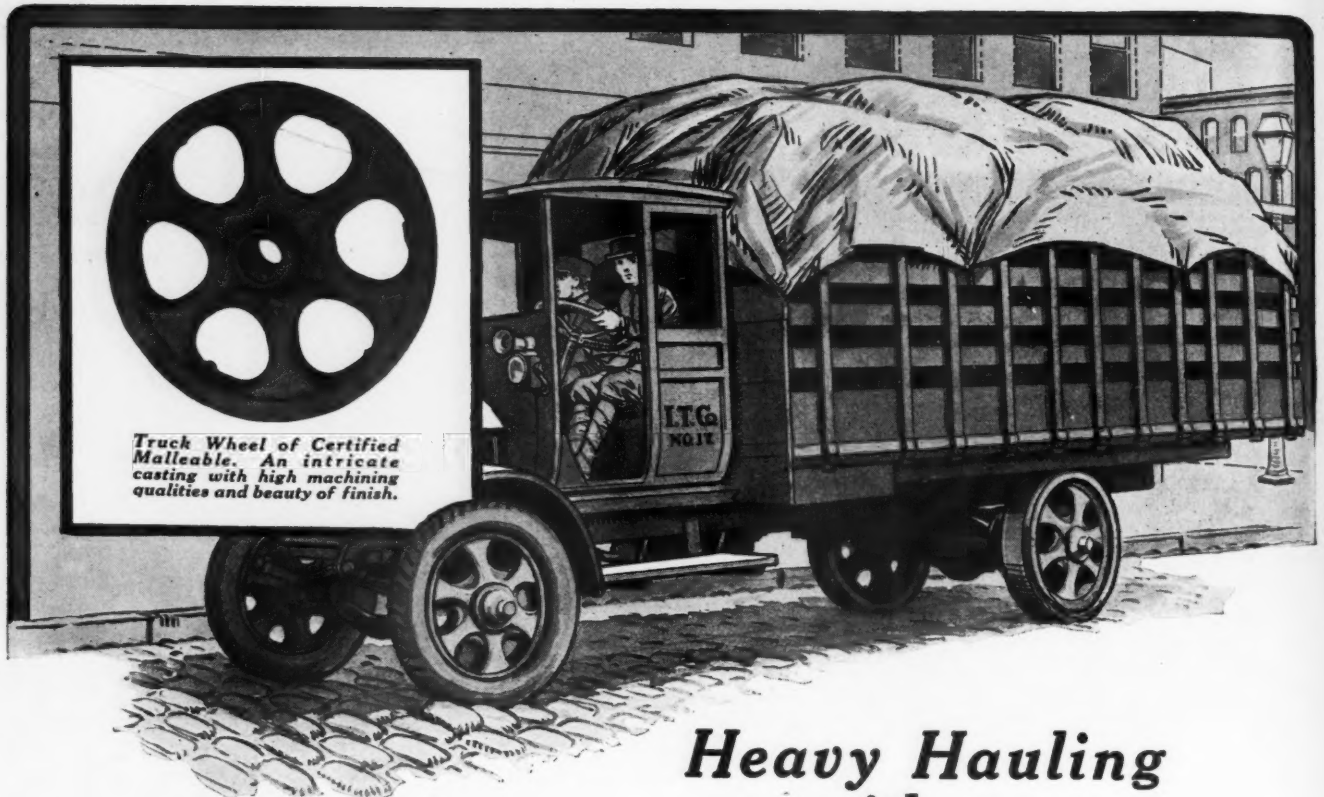


# AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

FACTORY:  
BLOOMFIELD, N. J.

ELMIRA, N. Y.

NEW YORK OFFICE:  
250 WEST 54TH ST.



## Heavy Hauling with Certified Malleables

### Plants Awarded Certificates for the Quarter Ending December 31, 1921

Albany Malleable Iron Company.....	Albany, N. Y.
Albion Malleable Iron Company.....	Albion, Mich.
American Malleable Castings Co.....	Marion, O.
American Malleables Co.....	Lancaster, N. Y. and Owosso, Mich.
Badger Malleable & Mfg. Co.....	South Milwaukee, Wis.
Baltimore Malleable Iron & Steel Casting Co.....	Baltimore, Md.
Belle City Malleable Iron Co.....	Racine, Wis.
Chain Belt Company.....	Milwaukee, Wis.
Chicago Malleable Castings Co.....	West Pullman, Chicago, Ill.
Columbus Malleable Iron Co., The.....	Columbus, O.
Danville Malleable Iron Co.....	Danville, Ill.
Dayton Malleable Iron Co.....	Dayton, O. and Ironton, O.
Decatur Malleable Iron Co.....	Decatur, Ill.
Devlin Mfg. Co., Thomas.....	Philadelphia, Pa.
Eastern Malleable Iron Co., The.....	Bridgeport, Conn.
Naugatuck Malleable Iron Works, Naugatuck, Conn.; Bridgeport Malleable Iron Works, Bridgeport, Conn.; Troy Malleable Iron Works, Troy, N. Y.; Wilmington Malleable Iron Works, Wilmington, Del.; Vulcan Iron Works, New Britain, Conn.	
Erie Malleable Iron Co.....	Erie, Pa.
Federal Malleable Co.....	West Allis, Wis.
Flagg & Co., Stanley G.....	Philadelphia, Pa.
Fort Pitt Malleable Iron Co.....	Pittsburgh, Pa.
Fraser & Jones Co.....	Syracuse, N. Y.
Globe Malleable Iron & Steel Co.....	Syracuse, N. Y.
Illinois Malleable Iron Co.....	Chicago, Ill.
Iowa Malleable Iron Co.....	Fairfield, Ia.
Kalamazoo Malleable Iron Co.....	Kalamazoo, Mich.
Laconia Car Co.....	Laconia, N. H.
Lakeside Malleable Castings Co.....	Racine, Wis.
Lancaster Foundry Co.....	Lancaster, Pa.
Link-Belt Co.....	Indianapolis, Ind.
Marion Malleable Iron Works.....	Marion, Ind.
Moline Malleable Iron Co.....	St. Charles, Ill.
National Malleable Castings Co., The.....	Cleveland, O.
Chicago, Ill.; Indianapolis, Ind.; Toledo, O.; E. St. Louis, Ill.	
Northern Malleable Iron Co.....	St. Paul, Minn.
Northwestern Malleable Iron Co.....	Milwaukee, Wis.
Peoria Malleable Castings Co.....	Peoria, Ill.
Pittsburgh Malleable Iron Co.....	Pittsburgh, Pa.
Rhode Island Malleable Iron Works.....	Hillsgrove, R. I.
Rockford Malleable Iron Works.....	Rockford, Ill.
Ross-Meehan Foundries, The.....	Chattanooga, Tenn.
St. Louis Malleable Casting Co.....	St. Louis, Mo.
Saginaw Malleable Iron Co.....	Saginaw, Mich.
Standard Malleable Castings Co.....	Terre Haute, Ind.
Stowell Co., The.....	South Milwaukee, Wis.
Symington Co., The T. H.....	Rochester, N. Y.
Temple Malleable Iron & Steel Co.....	Temple, Pa.
Terre Haute Malleable & Mfg. Co.....	Terre Haute, Ind.
Timken-Detroit Axle Co.....	Canton, O.
Trenton Malleable Iron Co., The.....	Trenton, N. J.
Union Malleable Iron Co., The.....	E. Moline, Ill.
Vermilion Malleable Iron Co.....	Hoopeston, Ill.
Wanner Malleable Iron Co.....	Hammond, Ind.
Warren Tool & Forge Co.....	Warren, O.
Webster Mfg. Company, The.....	Chicago, Ill.
Wisconsin Malleable Iron Co.....	Milwaukee, Wis.
York Mfg. Co.....	York, Pa.
Zanesville Malleable Co.....	Zanesville, O.

Vibration of buildings and rattling of windows convey some idea of the terrific impact between heavily loaded trucks and rough, unyielding pavements. Vital automotive parts must repeatedly absorb the giant blows that are dealt at every turn of the wheels.

Truck wheels of Certified Malleable possess unusual resistance to the constant punishment of road service. Great strength, high elastic limit and ductility insure the safety factor so necessary in heavy hauling, while natural smoothness of finish and unequalled machinability are important manufacturing considerations.

The same superior qualities that commend Certified Malleables for truck construction assure safe and enduring service to millions of motorists. Steering gear housings, wheel hubs, differential housings, spring hangers, and many other vital automotive parts of Certified Malleable uphold the quality and enhance the value of all cars in which they are used.

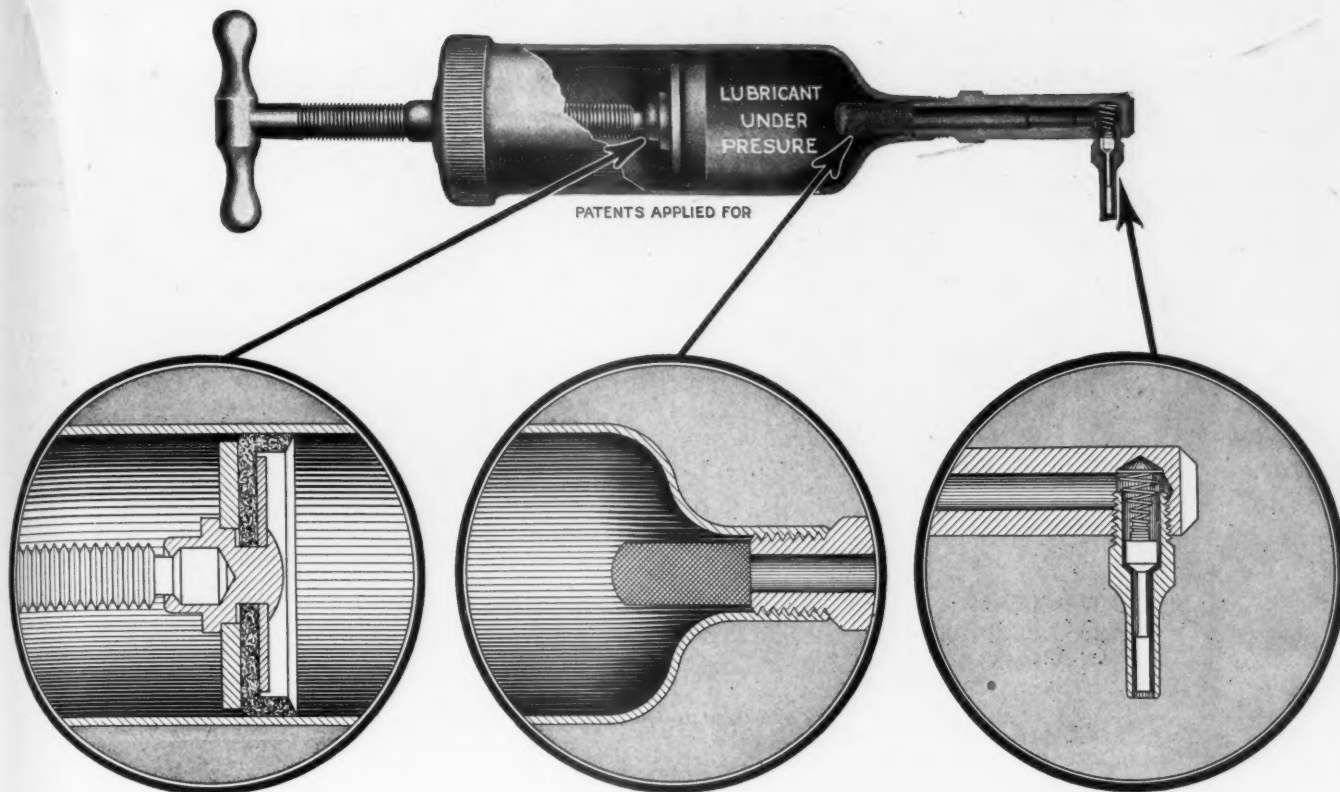
*Certificate holders listed here are manufacturers whose product for the quarter indicated has regularly met the requirements of the Association. In the judgment of the Association's Consulting Engineer, their plant practice is such as to produce uniform material of high character and integrity.*

THE AMERICAN MALLEABLE CASTINGS ASSN.  
The 1900 Euclid Building      Cleveland, Ohio



# CERTIFIED-MALLEABLE CASTINGS





### The Plunger

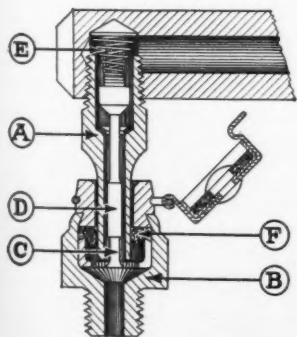
The construction and perfect fit of the leather-packed plunger insures maximum pressure and makes it impossible for the lubricant to back up behind the plunger. The swivel joint between the rod and plunger allows the plunger to travel up and down without turning, saving wear and insuring an absolutely oil-tight joint between the plunger and the barrel of the gun.

### The Screen

This fine-mesh brass screen effectively strains from the lubricant all foreign matter that may be present, such as: dirt, particles of metal or waste, etc., making it impossible for anything but clean lubricant to reach the bearing, eliminating the danger of choked bearing due to dirty lubricant. The screen is removable and can readily be taken out for cleaning.

### The Nozzle

Before applying to the connection on the bearing, the pressure is developed in the gun by turning the handle, forcing down the plunger; this firmly closes the valve in the nozzle, then as the nozzle is thrust into the connection on the bearing, the trip in the connection releases the pressure and a charge of the lubricant is shot in by the explosive action, completely flooding the bearing.



As the nozzle "A" is thrust into the connection "B," the trip "C" raises the valve "D," allowing a charge of the lubricant to be shot into the bearing under pressure. The spring "E" holds the valve closed when developing pressure. Packing "F" prevents the lubricant from backing up.

The Empress High-Pressure Lubricating System provides a better, simpler and quicker method of lubrication for the motor car and truck. It embodies the latest and best principles of pressure lubrication, at the same time eliminating the objectionable features common to the usual pressure systems.

## BOWEN PRODUCTS CORPORATION

MANUFACTURERS

AUBURN DIVISION, AUBURN, N. Y.

Write for Descriptive Booklet F—Today

# Empress

## HIGH PRESSURE LUBRICATING SYSTEM

FOR ALL MOTOR CARS AND TRUCKS

# General Motors Trucks



## Each GMC Cylinder Is a Separate Sleeve

*It can be removed and replaced in a few hours saving the usual heavy expense of taking out the entire cylinder block*

Motor truck users are looking for more than the unquestioned evidence of skilled engineering and precise manufacture in the truck they select today. For they appreciate as never before that mechanical accessibility is equally important to economical, uninterrupted performance.

A truck which must be laid up for perhaps days, with lost revenue and several hundred dollars worth of labor expended to replace or readjust a minor part, is an expensive proposition to own regardless of how well it operates.

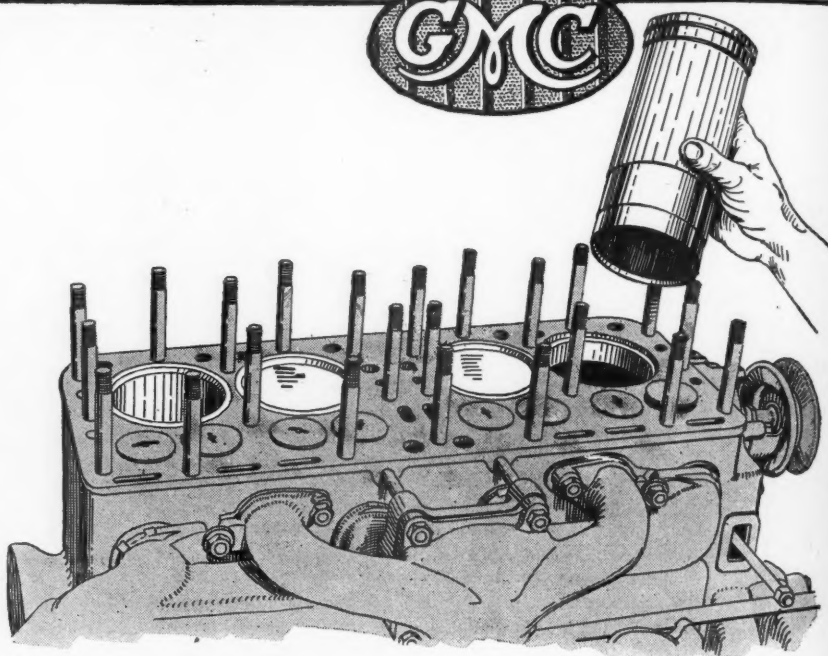
This is one of the many reasons for the growing preference among wise motor truck users for the GMC. The GMC engine was designed exclusively for motor truck usage with full appreciation of all the essential qualities necessary for the success of such an engine under all conditions—economy of operation—surplus power—and quick accessibility for readjustment and replacement, with the consequential lowered costs for this work.

As an example of the practical accessibility of GMC construction it is possible to remove a cylinder sleeve from a GMC engine and replace it in a few hours.

It is not necessary to lay the truck up for several days or to incur the heavy repair expense that follows when the entire cylinder block must be taken from the truck and remachined, as in the case of the common type of engine.

Each cylinder in a GMC engine is a separate sleeve which is pressed into place in the cylinder block.

This is a new type of cylinder construction



that not only adds to the efficiency of the engine's operation but also is most economical in cases of damaged cylinder walls.

The sleeves are machined on both sides to accurate thickness and the expansion and contraction of the walls under temperature changes, is consequently spread evenly, preventing the cylinder from becoming out of round and causing excessive wear.

Moreover this type of cylinder construction insures an absolute and continuous fit of piston rings and pistons, preventing any loss of compression as is the case of the common type of engine when cylinders become out of round.

This is only one of the many improved features of GMC construction that truck buyers everywhere appreciate because they insure more and better motor truck service at a lower cost for maintenance and operation.

Moreover the complete line of GMC trucks from one to five tons capacity has recently been reduced in price in keeping with the spirit of the times and substantial reductions also have been made upon all service parts.

**Here are six other features that insure better truck service and lower operating costs—**

- 1 **Two-Range Transmission**—develops 30% more pulling power without sacrificing speed for hauling over good roads.
- 2 **Removable Valve Lifter Assembly**—easy of access, easy to adjust, easy to replace and keep always in perfect condition.
- 3 **Dual Cooling**—cool water continually circulates around firing chambers—warmer water surrounds all vaporization points.
- 4 **Super Heated Carburetion**—gives greater power from present day heavy fuels and makes every drop of gas do more work.
- 5 **Fly Ball Governor**—governs instantly and positively to correct speed which helps prolong the life of every GMC.
- 6 **Pressure Lubrication**—this system is positive, simple and at the same time insures a wealth of oil upon all surfaces constantly.

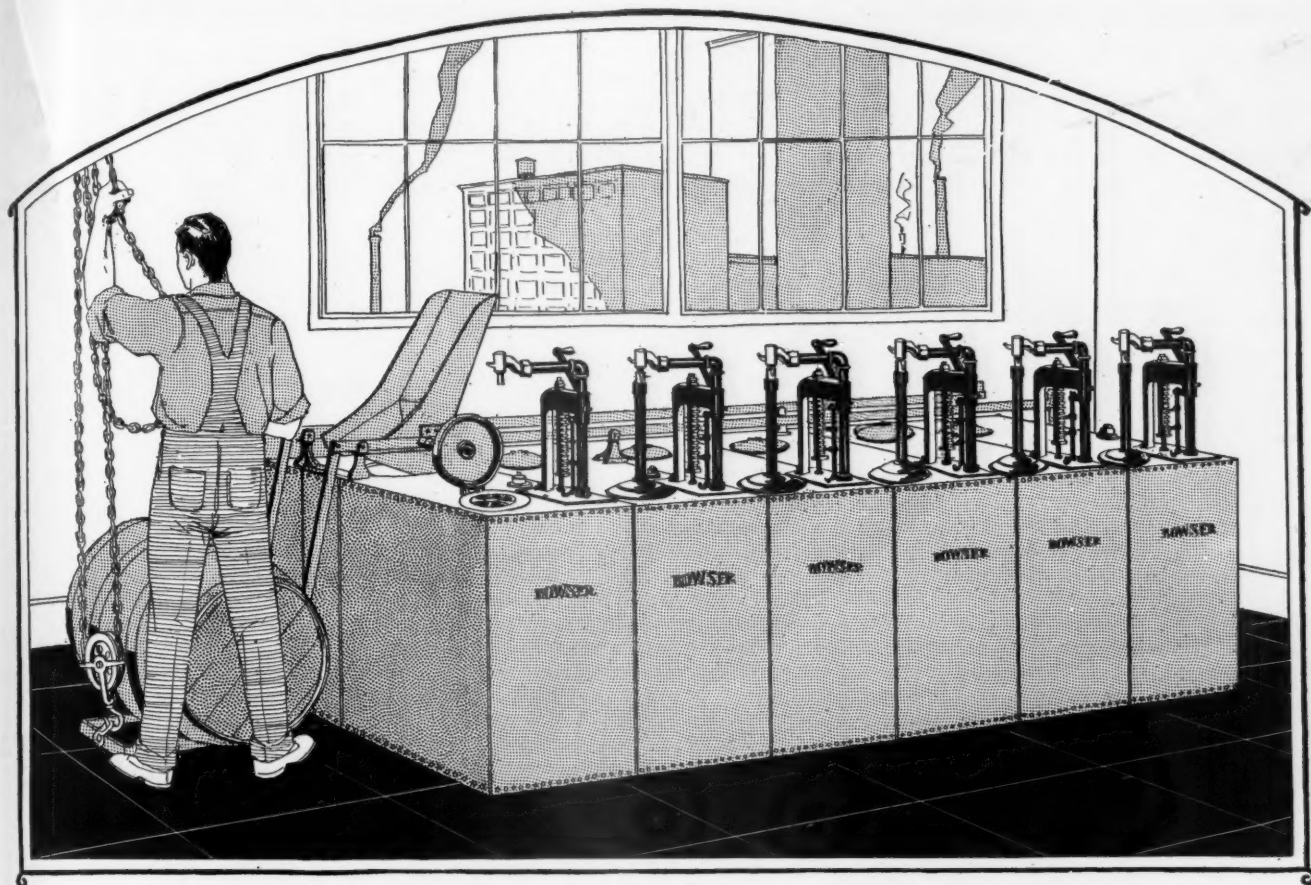
## GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

PONTIAC, MICH.

Branches and distributors in principal cities





## Centralize Your Oil Service for Neatness and Dispatch

You can handle and dispense any number of different kinds of oil conveniently when you install a Battery of Bowser Fig. 64's. Get one for each kind of oil and line them up together against the wall.

By centralizing your storage you save time and labor. Bowser-tight and all-metal construction eliminates gumming and leakage. The Piston-Type Measuring Pumps eliminate spillage and assure accurate measurement. These features combine to keep the oil and the oil room clean, to say nothing of adding to your profits.

Many motorists prefer service from Bowser Pumps. Can you supply that demand and hold their trade?

*Write for Illustrated Booklet A-06*

**S. F. BOWSER & CO., Inc.**  
1306 Creighton Ave. Ft. Wayne, Indiana

Sales Offices (with Service Departments) throughout  
the United States and in principal cities of the world

**S. F. Bowser & Co. of Texas**  
Dallas

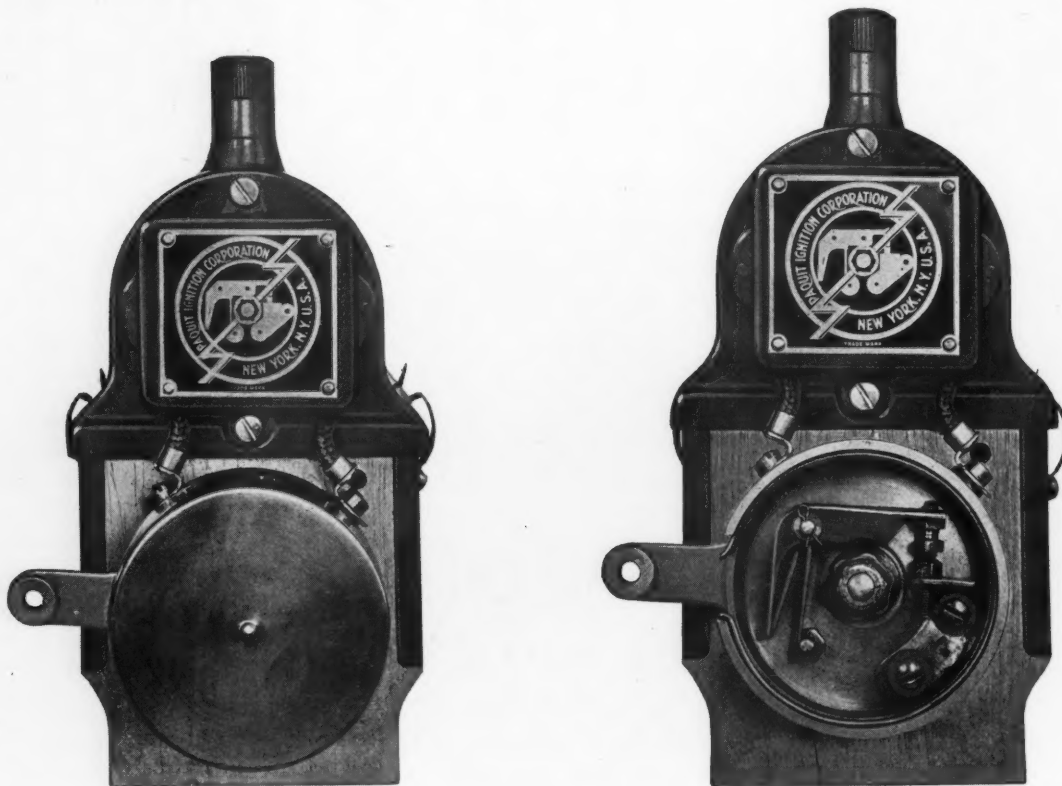
**S. F. Bowser & Co., Ltd.**  
Toronto

**BOWSER**  
ESTABLISHED 1885  
**PISTON-TYPE MEASURING PUMPS**

# "The Paquito"

(Pa-Kee-To)

## A Modern Ignition System



A simple unit, quality battery system with standard magneto base and wiring, providing rapid flame propagation. It will burn the heavy ends of fuel which means pronounced **fuel economy, better acceleration and greater power.**

Provides **dependable ignition** so essential to **economical operation and maintenance** of the motor truck. Water and fool proof.

Has but **one rotating part** which means long life and no delays on road or visits to the service station.

**Operates on any voltage** and will operate on a single dry cell.

Breaker box can be displaced by hand and cleaning and adjusting of breaker points done with a patented device with breaker removed entirely from unit.

Produced in four and six-cylinder magneto base types, also vertical units.

### PAQUIT IGNITION CORPORATION

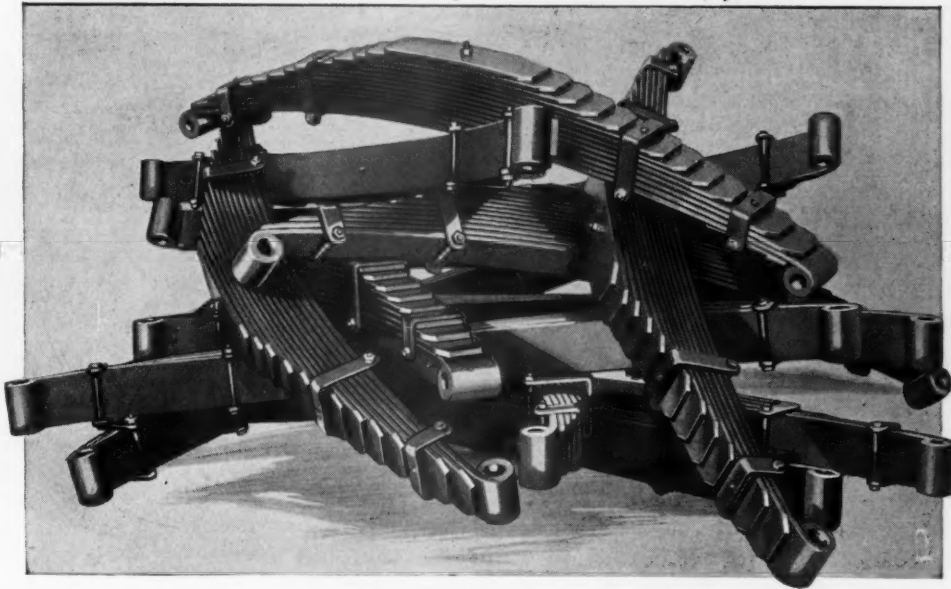
1819 BROADWAY

NEW YORK CITY



# MATHER SPRINGS

*Standard of the World*



Quality is always the most  
economical purchase when  
value is measured by service  
instead of price.

*Genuine Made Only By*  
**The MATHER SPRING CO.**  
TOLEDO, OHIO, U.S.A.

CARRIES THE LOAD

TAKES THE THRUST

**B**OWER bearings are used as standard equipment for automobile wheels by a large percentage of the leading American makers. Most of these have specified Bower ever since they began to manufacture cars.

**BOWER**  
ROLLER BEARING CO.  
Detroit Michigan



**Exclusive Bower Features**

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.





# COMPARE

## Dollar-for-Dollar-Value

### SPECIFICATIONS

Models	1K 1 1/2 Ton	76 2 1/2 Ton	66 3 1/2 Ton	5K 5 Ton
Continental Motor	N 3 3/4 x 5	C2 4 1/4 x 5 1/4	E7 4 1/2 x 5 1/2	B2 4 3/4 x 6
Timken Axles	1452	1540B	1630B	1730B
	6352	6560	6660	6760
Spicer Joint	300 Series	400 Series	500 Series	600 Series
Brown-Lipe Clutch and Transmission	30 U.P.P.	35 Amid	50 Amid	60 Amid
Stromberg Carburetor	M1 1 in.	M2 1 1/4 in.	M2 1 1/4 in.	M3 1 1/2 in.
Eisemann Magneto	GS4-II ed.	G4-II ed.	G4-II ed.	G4-II ed.
Steering Gears	Ross BU	Ross BL	Gem. R	Gem. R

### Turn to the Specification Table

See for yourself the greater dollar-for-dollar value of STANDARD MOTOR TRUCKS. Compare, for instance, the specifications of the 2 1/2 ton STANDARD with that of any other truck of similar rating. Note the rugged Continental Motor—efficient Stromberg Carburetor—dependable Eisemann Magneto—famous Brown-Lipe Transmission—unfailing Timken Axles. Every other unit throughout the chassis is of equally high quality.

And the price is only \$2400. No truck that compares in quality with the STANDARD sells at anything like this astonishingly low figure.

*You Dealers Know This*

# STANDARD

# STANDARD

## Greater Dollar-for-Dollar Value Spells Greater Dealer Profits

Quicker turnover tells the story. Here's why:

Practically every truck buyer knows the reputation of the nationally famous units which compose the STANDARD assembly.

This knowledge appreciably reduces the buyer's selling resistance.

The fact that the STANDARD is way under-priced in comparison with competing makes, lessens his resistance still more.

Finally the knowledge that he can get immediate parts service on 90% of the

STANDARD'S wearing parts clinches the sale for you.

224 parts stations covering the U. S. A. provide STANDARD dealers with the means to give customers fast STANDARD parts service. Think how this frees you from tying up a lot of capital in parts—if you are a STANDARD dealer!

We have not yet told you of the enthusiastic co-operation the factory gives the STANDARD dealer.

Wouldn't you like to know? The best time to get the whole STANDARD story is *now*. Write to

*Standard*  
U.S.



Standard Motor Truck Co.  
Detroit, Mich.

# TRUCKS



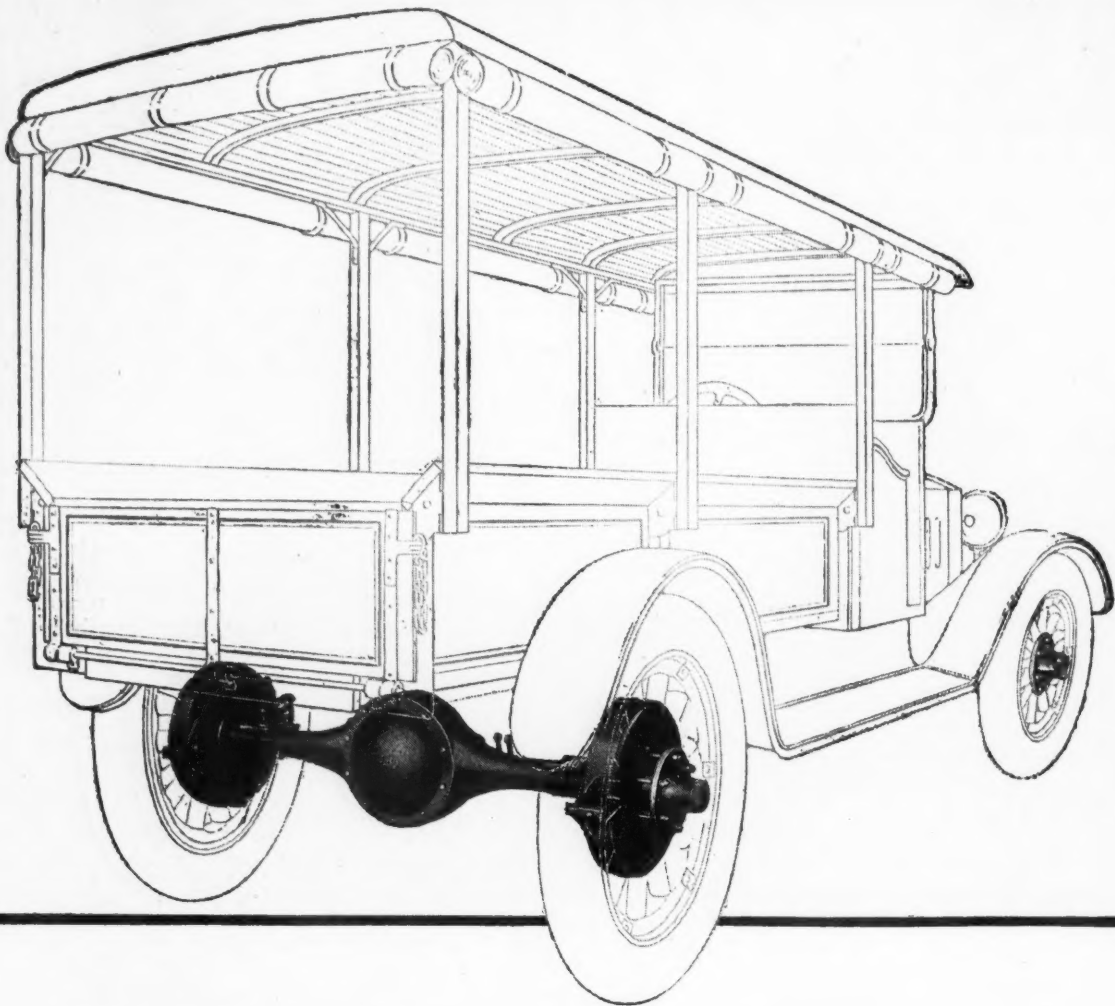
# MONO-TWIN

TRADE  
MARK*-it grips*

In winter, the slippery, ice-covered city streets, and in spring, the soft, mushy country roads present a serious problem to the trucking industry.

MONO-TWIN—adopted by many leading operators—is the surest safeguard against loss of time and injury to trucks resulting from insufficient traction.





## Half the efficiency of a delivery truck lies in the rear axle

**W**HEN we say that the rear axle of a high-speed delivery truck is as important as the engine, we simply repeat what every experienced truck-builder knows is true.

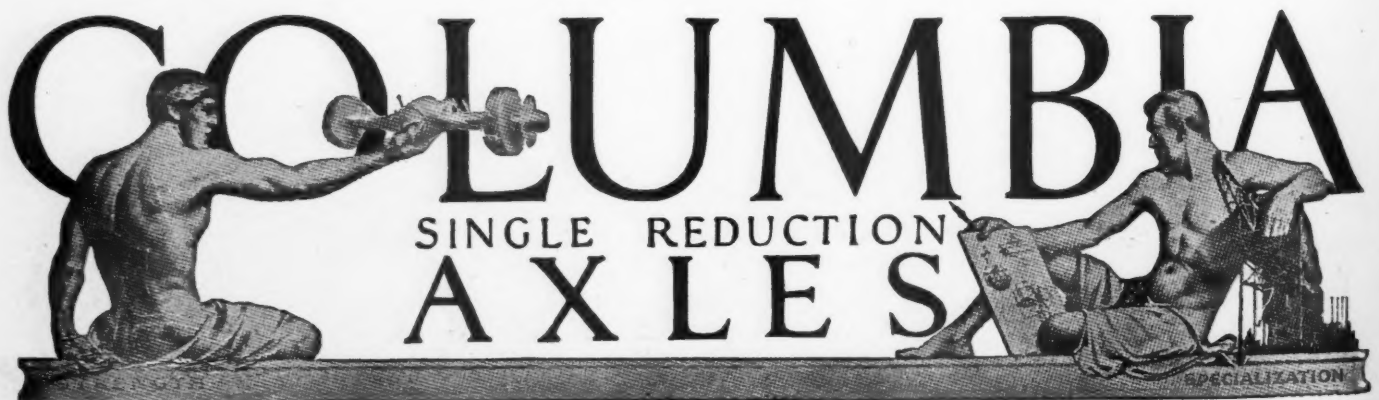
If you have had sad experience with inefficient axles we invite you to examine and test Columbia Single-reduction Bevel-gear Axles.

Built with extra-large ring-gears, driving

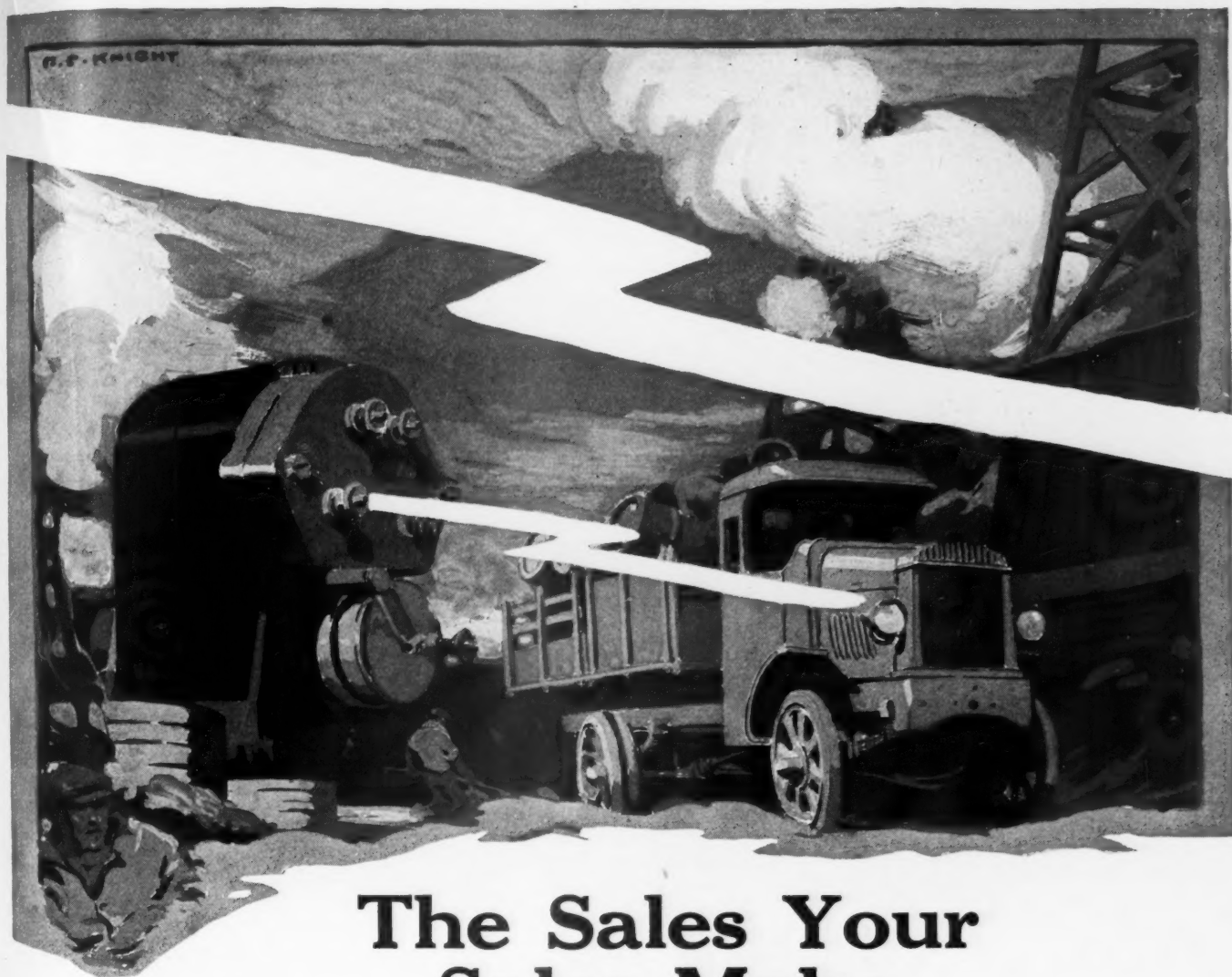
shafts and brake drums; enclosed in a housing pressed from a single piece of steel and welded once, Columbia Axles for light trucks have that absolutely necessary margin of safety and enduring efficiency required for delivery-truck work.

We are equipped to manufacture these axles in large numbers.

The Columbia Axle Company, Cleveland, Ohio







## The Sales Your Sales Make

The trucks you sell either make more truck sales for you or they queer them—depending upon how well they stand up and deliver.

Ignition's the thing! No matter how perfectly your truck is designed and built, if the ignition system is cheap—a rattle-trap of wires and castings—it will fall down on its job and the truck is stuck in the road for hours. *You* are the one that suffers, more than the owners, in loss of reputation and sales.

The proper ignition, a system you and your owners can depend upon—Bosch High-Tension Magneto Ignition—will be a really great selling asset to your whole line. Reliable Ignition on the product you handle should be one of your most important considerations.

Insist on Bosch Magneto Ignition on any truck that comes from the factory—*you can get it*—and if you do, your reputation is safe and your selling easier. Your sales stay sold and more sales develop. The dependable Bosch is known everywhere as America's Supreme Ignition System, rugged, lasting, efficient.

*Satisfy Your Customers*

*Specify Bosch*

Five Hundred Service Stations in Five Hundred Centers

**AMERICAN BOSCH MAGNETO CORPORATION**

Main Office and Works: Springfield, Massachusetts

Branches: New York, Chicago, Detroit, San Francisco

# B O S C H

# SHARON FRAMES

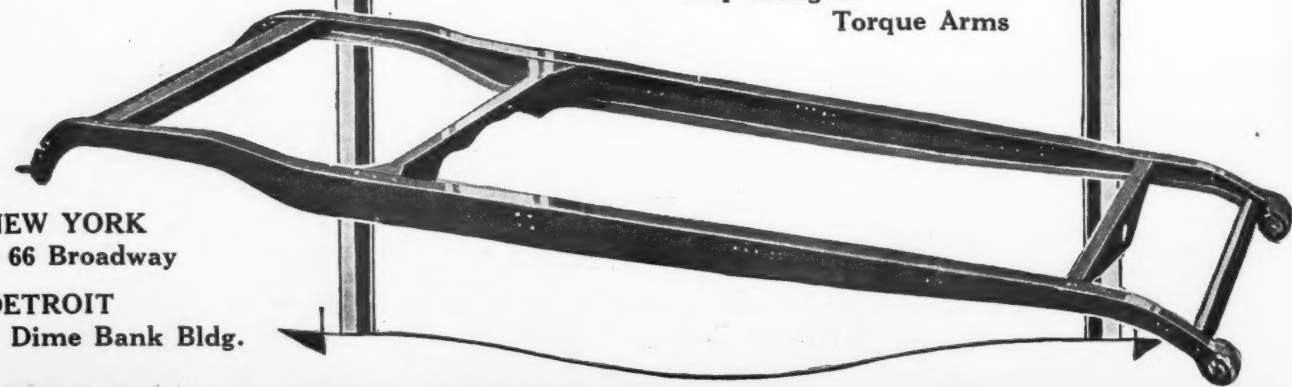


Built by men who know that their continued success rests upon the continued satisfaction of their customers, Sharon Frames never represent a compromise between quality and price. They are built as soundly and honestly as frames can be built—built to give the sort of service that helps make the reputation of a car or truck. Meeting the buyer's specifications in letter and in spirit, and delivered to him on schedule as ordered, they add a distinct and tangible value to the car or truck of which they are a part. Our engineers are ready to co-operate with yours. May they have the opportunity?

Axle Housings      Axle Housing Covers  
Brake Drums      Running-Boards  
Step Hangers  
Torque Arms

NEW YORK  
66 Broadway

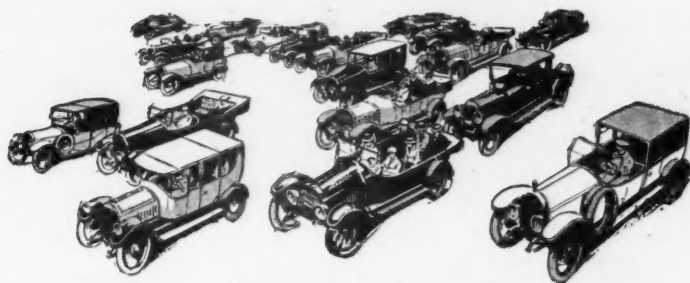
DETROIT  
Dime Bank Bldg.



## SHARON PRESSED STEEL CO.

MAIN OFFICE AND WORKS, SHARON, PENNA.





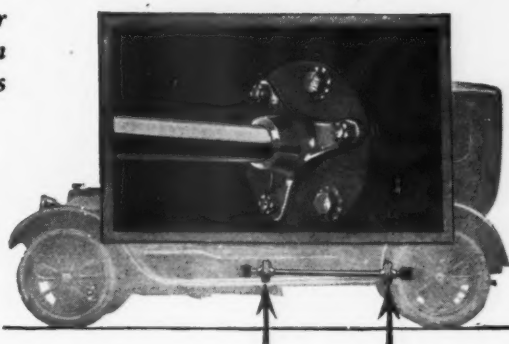
## The basic patent on the disc universal is the patent on Fanwise Construction

*The necessary strength, wear and freedom from vibration could be insured only by this method of construction*

**N**INE years ago a group of engineers started work on a new type of universal joint. From their efforts the now famous Thermoid-Hardy was developed.

The problem from the start was to secure a universal joint flexible enough to absorb all shocks, yet strong enough to withstand the tremendous strains in the driveshaft.

The logical outcome of the experiment was a flexible fabric disc. Yet the difficulty was to secure



a disc that would give the wear and not stretch out of true.

Fanwise Construction was finally worked out. Fanwise Construction means that the strands

in each layer of fabric run in a different direction. Look at the diagrams below. They show in a graphic way the difference between ordinary fabric disc universal joints and the Thermoid-Hardy Universal Joint.

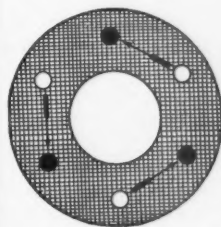
*You should have this book—sent free to any engineer or dealer*

We have prepared a book, "Universal Joints—Their Use and Misuse," that treats the whole subject from all its angles—the mechanical principles involved, construction, lubrication, processes of manufacture, tests for strength, and records of performance. Send for your copy today.

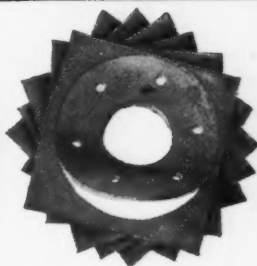
**THERMOID RUBBER COMPANY**  
Sole American Manufacturers  
Factory and Main Offices: Trenton, N.J.  
New York, Chicago, Los Angeles,  
Detroit, Cleveland, Atlanta, Boston,  
London, Paris, Turin

### LIST OF USERS

American British Mfg. Co.  
Allis Chalmers Mfg. Co.  
Anderson Motor Co.  
The Autocar Co.  
Available Truck Co.  
Barley Motor Car Co. (Roamer)  
Crow-Elkhart Motor Corp.  
Jas. Cunningham Son & Co.  
Dart Truck & Tractor Corp.  
The Dauch Mfg. Co.  
Diamond T Motor Car Co.  
Doane Motor Truck Co.  
Elgin Motor Car Corp.  
Elgin Street Sweeper Co.  
Fageol Motors Co.  
Fifth Ave. Coach Co.  
H. H. Franklin Mfg. Co.  
Garford Motor Truck Co.  
Gramm-Bernstein Motor Truck Company  
Handley Knight  
Hawkeye Truck Co.  
Hendrickson Motor Truck Co.  
Highway Motors Co.  
Holt Mfg. Co.  
Indiana Truck Co.  
International Harvester Co. of A., Inc.  
International Motor Co.  
Jackson Motors Corp.  
Kelsey Motor Co.  
Kentucky Wagon Mfg. Co., Inc.  
Kenworthy Motors Corp.  
King Motor Car Co.  
King Zeitler Co.  
Lakewood Eng. Co.  
Larrabee-Deyo Motor Truck Co.  
Lexington Motor Co.  
Locomobile Co.  
Menominee Motor Truck Co.



Ordinary flexible  
fabric disc



Thermoid-Hardy  
Fanwise Construction

At the left is an ordinary disc, its layers of fabric laid parallel. The three black holes are the driving bolts—the three white ones the driven. Notice that the left hand driving bolt is the only one that can pull in the direction of the strands of cotton. The other two must pull on a bias. This stretches the whole disc out of true, causing vibration and whipping of the entire shaft.

In contrast, examine the Thermoid-Hardy patented Fanwise Construction. Notice how the disc is built up with the strands of each layer of fabric running in a different direction. Each sector is of uniform strength and elasticity. Every stress is balanced—  
—the torsional stresses between the bolt holes  
—the centrifugal stresses from the center outward  
—the lateral stresses from the forward and back motion of the shaft.

This means the elimination of "whipping" and vibration. It means that the shaft is held in true on every revolution.

### LIST OF USERS

Mercer Motors Co.  
Moreland Motor Truck Co.  
McFarlan Motor Co.  
Nelson & LeMoon  
E. A. Nelson Automobile Co.  
Nelson Motor Truck Co.  
D. A. Newcomer Co.  
O'Connell Motor Truck Co.  
Oliver Tractor Co.  
Oneida Motor Truck Co.  
Packard Motor Car Co.  
Parker Motor Truck Co.  
Patriot Motors Co.  
Reliance Motor Truck Co.  
Reo Motor Car Co.  
Reynolds Motor Truck Co.  
Root & Van Dervoort Eng. Co.  
Sanford Motor Truck Co.  
Southwark Fdy. & Mach. Co.  
Sprague Electric Co.  
Stoughton Wagon Co.  
Studebaker Corp.  
Stutes Mar Tractor Co.  
Templar Motors Co.  
Tioga Steel & Iron Co.  
Towmotor Co.  
Traffic Motor Truck Corp.  
Transport Truck Co.  
Twin City Four Wheel Drive Co., Inc.  
United Motors Co.  
Walter Motor Truck Co.  
Ward La France Truck Corp., Inc.  
Watson Products Corp.  
Geo. D. Whitcomb Co.  
Wichita Motors Co.  
H. E. Wilcox Motor Co.  
J. C. Wilson Co.  
Willys-Overland, Inc.  
Zeitler & Lamson  
Truck & Tractor Co.

## THERMOID-HARDY UNIVERSAL JOINT

Fanwise Construction for strength

Makers of "Thermoid Hydraulic Compressed Brake Lining" and "Thermoid Crolide Compound Tires"

The owner of a car, truck or tractor who has once used

# DIXON'S 677

for lubricating the transmission and differential gears will continue to use it. Merit has its own reward.

Dixon's 677 is the result of a scientific study of gear-box requirements by the makers of the world's finest lubricants. Dealers and service stations report splendid repeat business.

*Write for Trade Price List No. 112-G*

**JOSEPH DIXON CRUCIBLE COMPANY**

*Jersey City, N. J., U. S. A. ~~XXXX~~ Established 1827*

**MAKERS OF QUALITY LUBRICANTS**

*For Spur and Bevel Gears Use Dixon's Gear Lubricant No. 677*

*For Worm Drives Use Dixon's Gear Oil No. 675*

*For Universal Joints Use Dixon's Grease No. 672*







## In Worm Gearing

In worm gear mountings only two Timken Tapered Roller Bearings are required

Where other types of bearings are applied three or even four bearings are often required. In this way Timkens reduce costs, vastly simplify the assembly, and lessen size and weight. Furthermore, because they carry more load per unit space required, Timken Tapered Roller Bearings permit reduction of the outside diameter of the housing, a vital advantage.

Nor does any other type offer the simplicity of encasement and protection from dust and dirt afforded by the Timken Bearing.

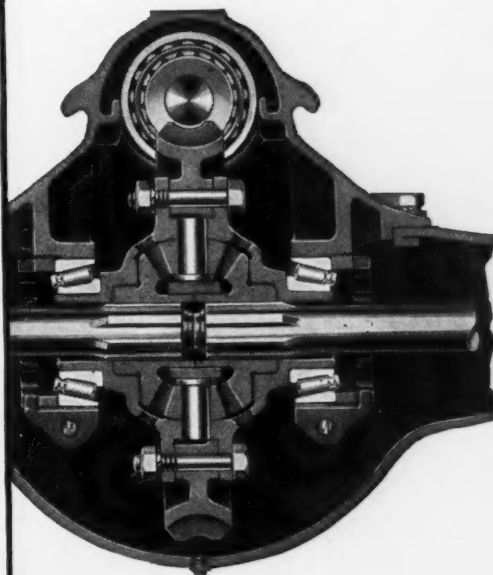
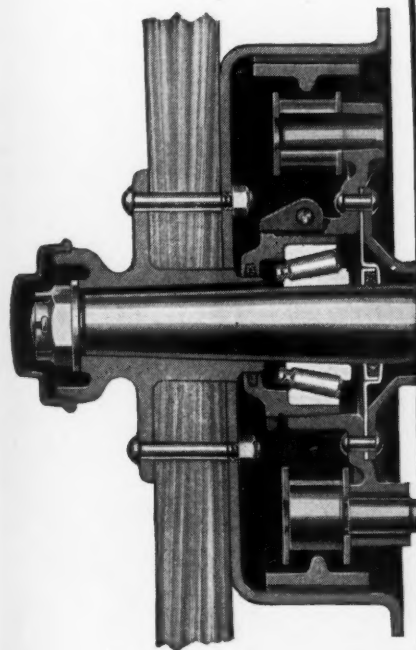
In the Timken layout; differential unit, worm wheel and worm shaft may be assembled and adjusted at the bench—and dropped into the housing as a unit.

In operation, the lightness, simplicity, and compactness all tend materially to increase the efficiency of the driving unit in transmitting power to road wheel contact by holding friction losses to the minimum and by saving unsprung weight.

And, finally, Timken Tapered Roller Bearings provide a quick and simple adjustment against that wear which *must* follow motion—

Just a simple adjustment and your Timkens function as when new.

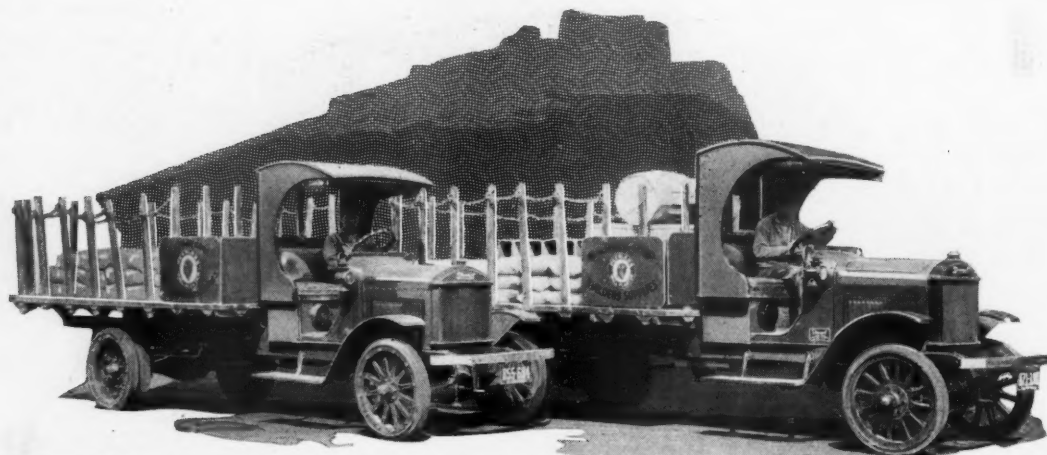
The Timken Roller Bearing Co., Canton, O.  
Timken Tapered Roller Bearings for Passenger Cars,  
Trucks, Tractors, Trailers, Farm Implements,  
Machinery, and Industrial Appliances



# TIMKEN

## *Tapered*

# ROLLER BEARINGS



## LOWEST-PRICED QUALITY TRUCKS

**M**ORE economical, more serviceable, more profitable to own—the 1922 Stewarts truly represent “the most truck for the least money!”

### NEW PRICES

Speed	Truck now	..	\$1195
1 ton	“	..	1395
1½ ton	“	..	1790
2 ton	“	..	2090
2½ ton	“	..	2290
3½ ton	“	..	3090

F. O. B. BUFFALO

With Stewart quality maintained in every detail; highest-grade materials; improved design and workmanship; low up-keep cost; these features have earned for Stewarts a world-wide reputation in nine years. Thousands are in daily use.

Valuable territory open for the live dealer  
Write for our liberal dealership proposition

**STEWART MOTOR CORPORATION**

Buffalo, N. Y.

# Stewart

## MOTOR TRUCKS





A good looking Vehisote body built by the Mifflinburg Body Co., Mifflinburg, Pa. (Distributors — Brooklyn Commercial Body Co., Brooklyn, N. Y.)

# VEHISOTE

(TRADE MARK)

## *Every Delivery Wagon Has a Tongue*

Through city streets and over suburban roads a merchant's wagon goes — talking about his business to the public.

The wagon with a Vehisote body tells a story of high standards — it suggests **good** goods for people of discrimination — it's good looking.

### Jobbers

- The Scovel Iron Store Co.  
San Francisco, Cal.  
Los Angeles, Cal.
- Waterhouse & Lester  
San Francisco, Cal.  
Los Angeles, Cal.  
Portland, Ore.
- E. C. Kadow & Co.  
Chicago, Ill.
- Mossman-Yarnelle Co.  
Fort Wayne, Ind.
- Wm. Stockhoff  
Louisville, Ky.
- A. M. Wood Co.  
Charlestown District  
Boston, Mass.
- Minneapolis Iron Store Co.  
Minneapolis, Minn.
- Nicols, Dean & Gregg  
St. Paul, Minn.
- The Faeth Company  
Kansas City, Mo.

Customers are proud to have it stop at their doors.

If it's an old-timer with body of steel or wood it **rattles** off its hard luck story of a business run down.

Vehisote is free from the faults common to wood or steel. It would be hard to find a dealer who is willing to guarantee that wood will not crack, split or check at any time after the expensive decoration and lettering has been paid for.

And harder still to find one who would guarantee that steel will not rust, rattle or squeak.

But any dealer who handles Vehisote bodies will be quick to tell you that his customers like them and re-order because they find that these faults do not occur with VEHISOTE.

### Jobbers

- Sligo Iron Store Co.  
St. Louis, Mo.
- W. T. Crane Carriage  
Hardware Co.  
Newark, N. J.
- Chas. Schick & Co.  
Trenton, N. J.
- N. Langer & Sons.  
Brooklyn, N. Y.
- C. H. Tiebout & Sons  
Brooklyn, N. Y.
- H. D. Taylor & Co.  
Buffalo, N. Y.
- H. Hett & Sons  
New York, N. Y.
- W. E. Kleine & Co.  
New York, N. Y.
- Gerhab & Ludlam  
Philadelphia, Pa.
- Jacob Gerhab  
Philadelphia, Pa.
- Shadbolt & Boyd Iron Co.  
Milwaukee, Wis.

## THE PANTASOTE COMPANY

Chicago  
Peoples Gas Bldg.

New York  
11 Broadway

Detroit  
1446 Penobscot Bldg.

# Westinghouse

## Five-Ply Service

The Service given to the car owner through its 275 Field Service Stations is only a part of the service Westinghouse is prepared to and does give to the man who builds and to the man who buys a car that is Westinghouse equipped.

Westinghouse serves every step of the way.

Before the manufacturing information is given the Production Department the car manufacturer receives Westinghouse Engineering Service which is backed by years of experience in research, design and application of electrical equipment to automotive vehicles. The result of this is that every car, Westinghouse equipped, has electrical apparatus that fulfills its individual requirements.

The Westinghouse standards of the materials, the manufacturing processes, and the tests for every article of electrical apparatus that leaves its plant produce Built-in-Service for the car builder and the car owner.

The way in which Westinghouse has met and solved Automotive Equipment problems in its new plant at Springfield, Massachusetts, insures the car manufacturer that although he may order any quantity of materials the quality will remain constantly at its best.

From the time the car or truck is first designed in the engineering department of its builder until it has served its usefulness for its last owner Westinghouse Service accompanies it all the way.

**WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY**  
Automotive Equipment Department  
Sales and Service Headquarters: 82 Worthington St., Springfield, Mass.  
Use Only Genuine Parts. Beware of Parasite Parts-Makers

**STARTING - LIGHTING  
IGNITION**



# QUALITY SNAPRINGS

*More Than  
a Million a Month*



The world-famed  
Oldsmobile is *also*  
equipped with  
Quality Snap Rings.

THE *Piston* RING COMPANY  
MUSKEGON, MICH.



The Hayes All-Metal Cab can be purchased knocked down, if desired. Below is the second assembly operation:

### Assembling Tool and Battery Box Partitions

Set the tool and battery box partitions on top of the sills with the flanges turned toward the outside of the Cab, as shown in the views on this page.

Bolt to the heel board with three bolts in each partition.

Bolt to the sill flange with four bolts in each partition.

Do not tighten up these bolts.

Another operation next month.

*Equip Your Truck With Hayes Cabs*

**You See**

**Every Day**



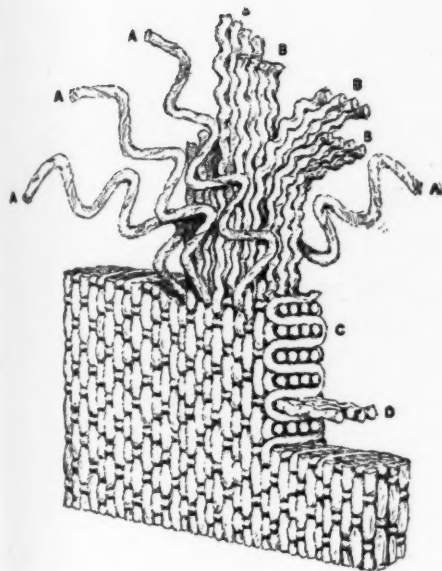
**Everywhere**

**Sheet Metal Products**



# Most remarkable drawing of brake lining ever made

*Shows how RUSCO WOVEN THREADS make RUSCO quality superior*



TO THE man who knows how the best brake lining should be woven, this drawing speaks volumes in quality and perfection. It is not enough that the

threads be composed of 90% asbestos and brass wire (as Rusco threads are). Unless every one of those threads is a *woven* thread, the finished brake lining is going to fall down.

## Ever hear of "gutting" threads?

It is an absolute fact that brake lining can be woven with "gutting" or filling threads that lie lengthwise of the fabric, in the center of the fabric, and which, in

spite of this, are really not part of it, because they are not *woven* into it. They merely lie in it to give it bulk. When the wearing surface reaches them, they quickly separate and go to pieces.

## What crinkled threads mean

If you braid three strings together and then unbraid them, they look crinkled. The crinkle shows that they have been

braided. In the same way, crinkles in Rusco brake lining threads prove that they have been woven into the fabric.

## Now see this drawing

This is a piece of "raw" Rusco Brake Lining before being treated or compressed. In this drawing are shown sections across the lining, lengthwise of the lining, and also unravelled threads of every kind of thread of which Rusco Brake Lining is composed. The threads labeled "B" are longitudinal threads each woven into a single ply only. Notice that they are *crinkled* which

proves they were *woven*. The threads labeled "A" are binder threads, woven from surface to surface, binding the ply together. Notice their *crinkle* which proves they were woven. "C" shows the path of a binder thread "A," showing how it weaves through and through from surface to surface. "D" are crosswise threads, and notice that these also are *crinkled* and hence *woven*.

## The point to remember in selling brake lining

The things to remember about quality in brake lining are, first; that 90% by weight should be asbestos and brass wire, and, second, that every thread should be a *woven* thread. Only then

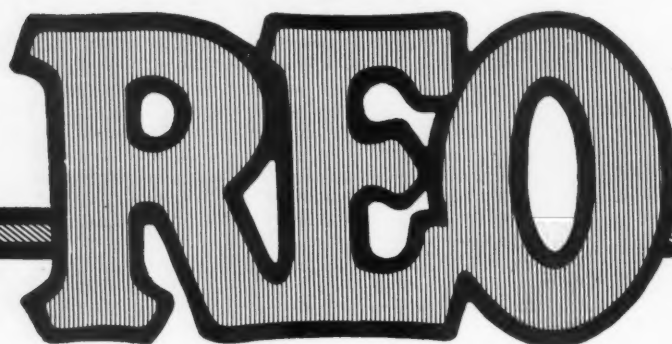
can you get perfect braking, in all kinds of weather, in any emergency. Rusco Brake Lining is made this way. It will eventually wear out. But it will *always* give *perfect* braking. Economical and safe.

THE RUSSELL MANUFACTURING COMPANY

MIDDLETOWN, CONN.



# RUSCO PRODUCTS



## A Model For Every Kind of Service

Is it any wonder Reo dealers are as a class prosperous and happy?

In the Reo line, which comprises five types of passenger cars, that wonderful Speed Wagon, and a Taxi-Cab chassis, there is a motor vehicle that exactly fits the need of every class of customer.

With attachments that the Reo Factory furnishes as standard, the Speed Wagon body can be converted into twelve distinct forms.

That new Taxi Chassis created a sensation at the New York Show.

Do you know of any other line that even approximates the Reo line for completeness and versatility?

Just think: besides the standard passenger models—7-Passenger Touring, 3-Passenger Roadster, 4-Passenger Coupe, and 5-Passenger Sedan—there are now obtainable in this sterling Reo Product a special Business Coupe, and the sturdiest Taxi-Cab chassis ever built—

A letter to the Sales Department will find out for you whether there's any opening at this time and will put you in line for consideration later on.

**Reo Motor Car Company, Lansing, Michigan**



# There is Only One *Original* Robert Bosch

You are not getting the *original* Robert Bosch Products, standard since the beginning of the Automotive Industry, unless they bear this trade-mark:



TRADE MARK

together with the full name

**ROBERT BOSCH—**  
Magnetos, Spark Plugs and  
Other Automotive Specialties

Made by the largest organization of its kind in the world, and used for thirty-five years the world over.



**The ZU4 Magneto**

is especially designed for trucks, tractors, etc. Can be furnished with impulse couplings to facilitate starting.

**Definitely Designed to Meet Definite Needs.** *Send for Interesting Descriptive Literature*



**Robert Bosch Spark Plugs**

reduce the possibility of ignition troubles to the minimum. Their exclusive structural features insure extraordinary service.

**ROBERT BOSCH MAGNETO COMPANY, Inc.**

OTTO HEINS, President

123 West 64th Street

New York, N. Y.



## BRINGS BUYERS AND SELLERS TOGETHER



When the CHILTON SYMBOL is displayed in an advertisement it informs interested buyers that the advertiser has placed detailed purchasing information in the current issue of the CHILTON AUTOMOBILE DIRECTORY.

Those who want to buy can quickly consult their copies of the industry's Purchasing Guide and find prices, order numbers, specifications, and, frequently, lists of Distributors or Jobbers.

More sales are made, because the Symbol simplifies buying. Use it in your advertising!

**Chilton Automobile Directory**

Market and 49th Sts.  
PHILA., PA.



# The Value Sensation of 1922

The highly improved, more powerful, 1922 heavy-duty Gramm Pioneer Trucks listed below are the outstanding achievement in the twenty-one years of successful experience of the Gramm Pioneer engineering corps.

## *Note These Significant Facts*

	Stripped	Completely Equipped
<b>Model 30, 3 Ton</b>	<b>\$3,275</b>	<b>\$3,575</b>

The average stripped chassis price of all the other 3 ton trucks listed in Commercial Car Journal is \$3,801. The difference in favor of this model is \$526.00. The weight of this model is 6,800 lbs. The average weight of the 3 ton models of 24 competitors listed in Commercial Car Journal is 5,657 lbs. The difference in favor of this model is 1,143 lbs.

	Stripped	Completely Equipped
<b>Model 40, 4 Ton</b>	<b>\$3,995</b>	<b>\$4,375</b>

The average stripped chassis price of all the other 4 ton trucks listed in Commercial Car Journal is \$4,350. The difference in favor of this model is \$355.00. The weight of this model is 8,350 lbs. The average weight of the 4 ton models of 16 competitors listed in Commercial Car Journal is 7,468 lbs. The difference in favor of this model is 882 lbs.

	Stripped	Completely Equipped
<b>Model 50-60, 5 to 6 Ton</b>	<b>\$4,895</b>	<b>\$5,275</b>

The average stripped chassis price of all the other 5 to 6 ton trucks listed in Commercial Car Journal is \$5,785. The difference in favor of this model is \$890.00. The average weight of the 5½ to 6 ton models of 19 competitors listed in Commercial Car Journal is 8,880 lbs. The difference in favor of this model is 980 lbs.

## **10% More Mileage——15% More Power**

The new Pioneer Fuel Economizer on all 1922 heavy-duty models increases mileage about 10% to the gallon and motive power about 15% for the same motor and load. Remember that low ton-mile cost is the only real economy.

**Direct Factory Contracts for 1922 Are Now Being Written**  
**The Gramm Motor Truck Company**                      **Lima, Ohio**

## **"The Recognized Standard of Quality"**

# It Will Not Pay You to Experiment With Your BUS SEATS



Interior of Washington Rapid Transit Co. Bus Equipped With Heywood-Wakefield Seats

The picture above shows an installation of our seats in a modern Bus. This fine vehicle was not produced without the experience gained by many earlier efforts; but it is possible today for the operator of a passenger Bus to start with the full advantage of all the experiments of the past.

## To be Successful the Bus Must be Popular Seats the Important Factor

In the earliest stages of development of the Motor Bus in America, both builders and operators sought the co-operation of Heywood-Wakefield seating specialists. It was natural that they should have done so for two reasons. First, because they realized that the seat would be the important factor in securing passenger comfort; and second, because the Heywood-Wakefield organization stands foremost among the makers of all kinds of chairs and seating.

This is true in the case of seating for the Motor Bus, and there is a reason. Every development of the Bus has been followed closely.

The result has been the perfection of a most practical and altogether successful seat for this class of service. We are indebted to the large numbers of operators and builders for much of this development.

**Today's buyer does not need to risk an untried seat.**

Do not experiment. Let us send you photographs, specifications and a suggested seating plan to suit your special needs.



Standard spring-edge seat upholstered in artificial leather.

## HEYWOOD-WAKEFIELD COMPANY

FACTORY  
WAKEFIELD, MASS.

### SALES OFFICES:

Heywood-Wakefield Co.  
516 West 34th St  
New York

Railway and Power Engineering Corp.  
Toronto and Montreal

E. F. Boyle  
Monadnock Bldg.  
San Francisco, Cal.

Heywood-Wakefield Co.  
1415 Michigan Ave.  
Chicago, Ill.

F. N. Grigg  
630 Louisiana Ave.  
Washington, D. C.

G. F. Cotter Supply Co.  
Houston, Texas





### LARGEST Truck Tank

of its kind in the world. Its Columbian Partition Mounted, Three-Point Supported construction eliminates about 2000 lbs. excess dead weight. Capacity, 2520 gallons. Mounted on  $7\frac{1}{2}$  ton chassis.

## Selling a Truck Without a Body is Like Taking a Girl Half Way Home

**Finish the Job Right—Sell Columbian Partition Mounted, Three-Point Supported Truck Tanks**

Every Detail of Each Job Managed by Skilled Engineers.

Designed, Blueprinted and Fabricated to Accurately Fit Trucks from Smallest to Largest.

Load is Correctly Distributed on Rear Axle.

Not One Pound More of Metal Used Than is Actually Needed.

Partition Mounting (Patented) Eliminates 200 to 2000 Pounds Deadweight. Every 6.6 Pounds Deadweight is One Gallon More Live Load.

Three-Point Support (Patented) Frees Tank of Twisting Strains. Adds Life to Tank and Truck.

Jointless Pipe Lines With Funnel Outlets from Compartments Empty 25 Per Cent Faster.

Tank, Mounting, Pipe Lines and Bucket Box Welded Into a Mono-Metallic Unit.

Removable Side Carrying Racks Handle Emergency Loads.

### THE BIG FOUR of the Truck Equipment Field

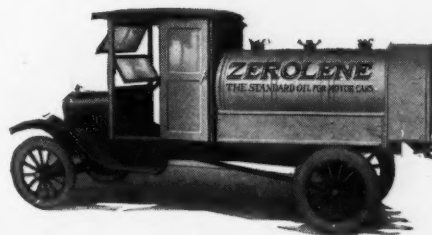
Partition Mounted, Three-Point Supported Truck Tanks

Mono-Metallic Dump Bodies

Lightning Hand Hoist

Motor-Motive Power Hoist

*All of Columbian Manufacture*



More Columbian Partition Mounted, Three-Point Supported Truck Tanks Being Sold Than All Other Makes.

Their Great Features of Economy Mean Saving of Millions in Transportation of Oil.

Save Their Cost Every Year in Operation.

Read the Whole Story in 80 Pages of Text and Illustrations in the Columbian Oil Equipment "Encyclopedia."

*The First Step Toward Standardization—Economy—Efficiency  
is a Columbian Blueprint on the Job You Want*

# COLUMBIAN STEEL TANK COMPANY

ESTD

1894

1405-1625 WEST 12<sup>TH</sup> STREET



KANSAS CITY, MO.



*Signal Chasses Have Proven Satisfactory for Bus Bodies of All Kinds*

## A Business Proposition for Business Men

Merchandisers in nearly every line of business buy their goods on something other than cash on delivery terms. They are often able to make their turnover before remitting to the manufacturer. This has not often been the case in the automotive industry.

We have worked out a merchandising plan which is based on good business practice backed by intensive factory co-operation, not only from the standpoint of in-built quality in the product, but also includes selling and service.

If you are interested in a policy which will allow you to do more business on your present capital, and have the ability to get your share of motor truck orders in your territory, then a truck that is "always on the job" will reduce sales resistance. It will be to your advantage to ask us just how this can be done.

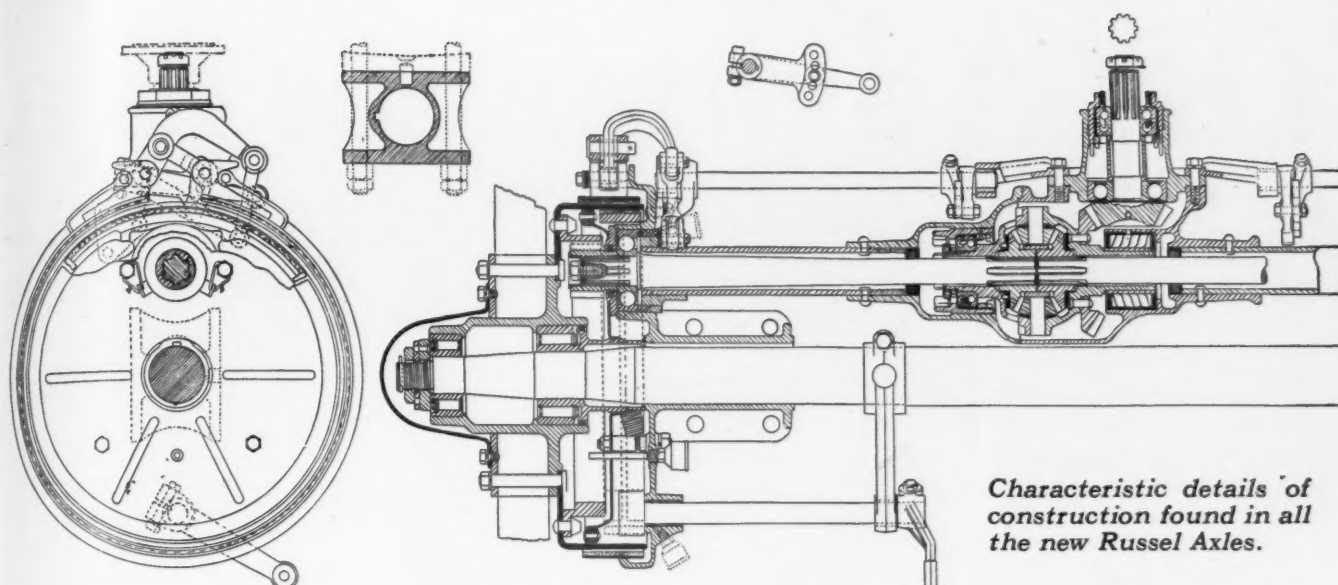
**1 TO 5 TONS CAPACITY**

# Signal Truck Corporation

Mfrs. of **SIGNAL** Trucks

**Detroit, Michigan**





*Characteristic details of construction found in all the new Russel Axles.*

## The New Russel Truck Axles Are 92% Efficient at All Speeds

Even a casual examination of the design of these greatly improved internal-drive axles makes plain their superior advantages.

There are more teeth in mesh in the new Russel units than is true of other forms—consequently there is less strain on each tooth.

The only internal axles using the remarkably efficient spiral bevel drive, these highly perfected driving members provide an unusual degree of quietness in operation. Note that this high-class construction gives more tooth contact—which practically eliminates the danger of breakage of teeth.

Completely enclosed, the wheel gears are positively dust-proof. A nickel-steel, 4 pinion type of differential of improved design is provided. The mounting of the jackshaft pinions is such that the pinions can readily be removed without disturbing the jackshaft. There is an adjustment for the brake lever. A means for adjusting the wheel bearing is also provided.

The high application of power delivered by the new Russel Truck Axle to the rear wheels—a tested efficiency of 92% at all speeds—warrants quality truck manufacturers in making a thorough investigation of this advanced design.

*Made in 4 new models—for 1, 1½, 2 and 2¾ ton trucks.*

*Also 3 new bevel drives—¾, 1, and 1¼ ton—for speed-truck jobs.*

*Write for Complete Details and Send Us Your Specifications*

**RUSSEL MOTOR AXLE COMPANY  
DETROIT, MICH.**

**INTERNAL and BEVEL DRIVE**

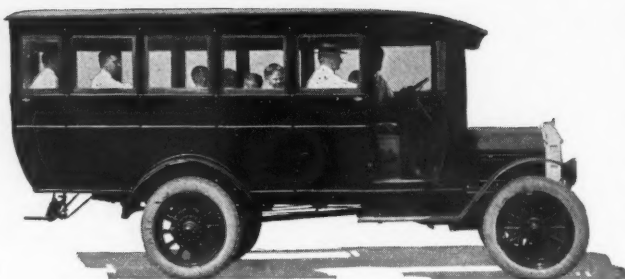
# Russel Truck Axles

# The Advantages of a Bessemer Contract

In making a new connection it is highly important for a dealer to determine carefully whether the contract he assumes is a step toward greater opportunity or a noose into which he places his neck.

Regardless of the merit of any truck, analyze the contract you are called on to acquire. Is it *fair*? Is it *liberal*? Is it *equitable*?

The Bessemer contract is nothing more than a Bond between honorable business men. It contains no jokers; no pitfalls; no provisions that are impossible to fulfill and that cramp initiative. It is merely a document containing in writing some salient points of understanding between us as manufacturers and you as



The Bessemer 18 Passenger School Bus

a dealer that should not be left to memory.

This is a time for *selling*; for ceaseless and unremitting solicitation, and the Bessemer contract enables you to go out and **SELL** a splendid line of motor

All Bessemer Motor Trucks are equipped with the L. M. Axle that the U. S. Bureau of Standards adjudged 94½ to 97½ per cent efficient in power transmission for all powers within the range for which it is intended.

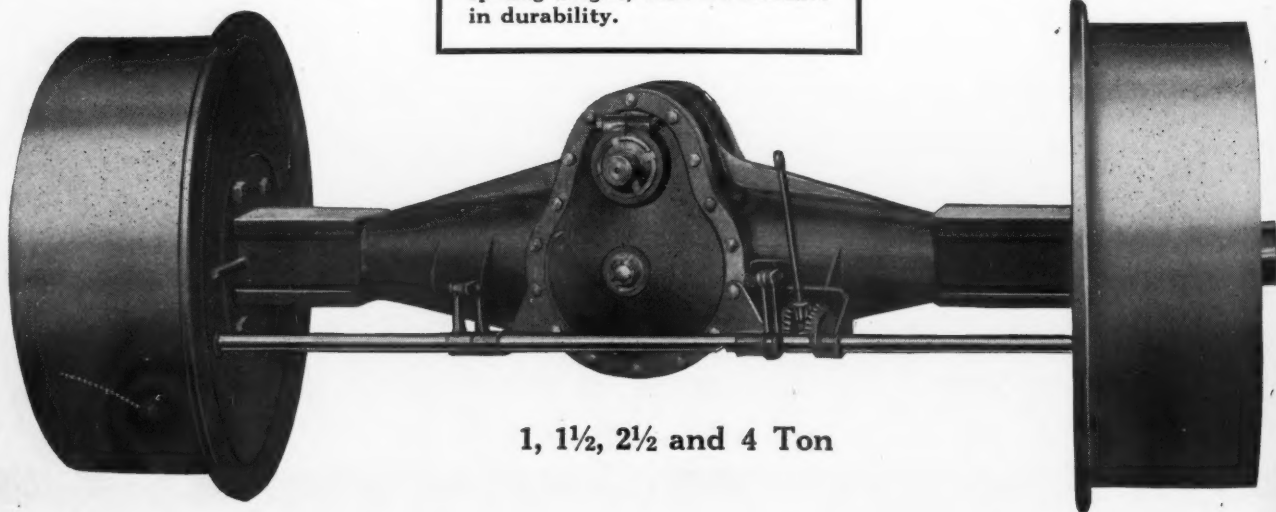
It is a Tandem Duplex Drive securing maximum durability, minimizing gear wear, eliminating noise, affording maximum road clearance, and has less unsprung weight, with no sacrifice in durability.

trucks free from worry and distraction.

We do not compel you to sign up for impossible quotas, nor has it ever been our policy to overload dealers beyond the limit of their selling capacities. We pledge our faith in you, if you measure up to our standard, and then back you to the limit with our factory co-operation and advice.

It is not necessary to mention the reputation of Bessemer Motor Trucks. Their worth is established and known. We offer the right dealers something more than a splendid truck line. We offer the widest leeway for constructive effort that you can obtain with any motor truck agency. We would like to tell you more.

**BESSEMER MOTOR TRUCK COMPANY**  
Grove City, Pa.



1, 1½, 2½ and 4 Ton





## Why Strom Bearings Stand the Test of Heavy Duty

Sturdiness, reliability and durability are three of the essential qualities for bearings used in heavy service.

All of these qualities are found in Strom bearings. These bearings reduce friction to a minimum permitting the delivery of

maximum engine power to the driving wheels.

Strom bearings require little attention and no adjustments are necessary.

Our engineering department will be glad to work with you on any heavy duty bearing problems which you may have.

**U. S. BALL BEARING MFG. COMPANY**

*(Conrad Patent Licensee)*

4542 Palmer Street, CHICAGO, ILLINOIS

**Strom**  
BEARINGS

# What Truck Dealers Need

## Ten Points of Transport Superiority That Mean Most Profitable Business for Dealers

**1. Quality** Every Truck in the Transport Line is composed of America's recognized best units co-ordinated by the most experienced builders in the Transport's exclusive truck factory. Better trucks are not made—at any price.

**2. Low Prices** Every Transport Model is priced hundreds of dollars below any other truck that can be compared with it. Read the prices below.

**3. A 100% Line** Transport equips you to sell complete transportation—economical, dependable transportation—with a model for every need, from fast one-ton delivery to heavy five-ton service.

**4. Specialized Trucks** There is a Transport Truck specialized in construction, capacity and equipment for every known transportation. With Transport every possible truck user in your territory is *your prospect*.

**5. Complete Equipment** Observe the complete equipment of Transport Trucks, included in the chassis price. Your customers have the *added* advantage of a big saving because of the equipment that comes with the truck.

**6. Better Service** Every Transport unit is the most thoroughly standardized. In addition to Transport service, every unit is nationally serviced by parts manufacturers. Service on Transport Trucks is immediate and complete.

**7. Better Merchandising** Transport backs its distributing organization with result-producing Sales Promotion. Get the details of our co-operation—also the opinions of Transport dealers.

**8. Evidence of Success** At leading points Transport has outsold its competitors from the start. No Transport distributor has ever left us to take on another line.

**9. Factory Personnel** Transport Truck Company is headed by men of long and successful experience in the sales field as well as the factory. They work *with* the dealer.

**10. Financial Responsibility** Transport Truck Company is one of the most solidly financed institutions in the country. It has no notes nor bonds with interest charges to add to the price of trucks. Transport works on its own capital—delivers more value for the price—and insures users continual service.

### Six New Models—at New Low Prices

Model 15, Rapid Transport, fast one-ton speed job, equipped with pneumatic tires, electric lights and starter, seat, windshield, fenders and running boards . . . . . **\$1295**

Model 25, 1½-ton, complete with electric lights, bumper, radiator guards, hubodometer and motometer . . . **\$1495**

Model 35, 2-ton capacity, equipped with radius rods, drive-

shaft brake, four-speed transmission, and electric lights, bumper, hubodometer and motometer . . . . . **\$1885**

Model 55, 3-ton capacity (same equipment as Model 35) **\$2385**

Model 60, 3½-ton capacity (same equipment as Model 35) . . . . . **\$2585**

Model 75, 5-ton capacity (same equipment as Model 35) **\$3485**

Every need of every truck dealer is met by the Transport line. The Transport franchise is the most desirable in the market. If your territory is not closed we suggest that you get in touch with us at once

**Transport Truck Company, Mount Pleasant, Michigan**

# TRANSPORT



# A New Plan

## To Speed Up Business for Truck Makers and Dealers

**T**HE truck maker who can offer buyers, thru his dealers, a complete service gets the business—even in today's highly competitive market.

A complete service means that your dealer makes a correct analysis of his customer's requirements; recommends the most efficient and economical truck and trailer units; and proves to the complete satisfaction of his customer that these recommendations will save and make money.

Under the Biggam Trailer Company's Plan, the manufacturer's dealer organization is trained (by the Biggam Trailer Company) in the making of surveys and analyses, in order that the proper trailer equipment will be installed.

Biggam Trailers, carrying the truck maker's trade name and the guarantee plate of Biggam Trailer

Company are routed direct to the dealer or the buyer. This takes the actual handling of the trailers entirely off the truck manufacturer's hands.

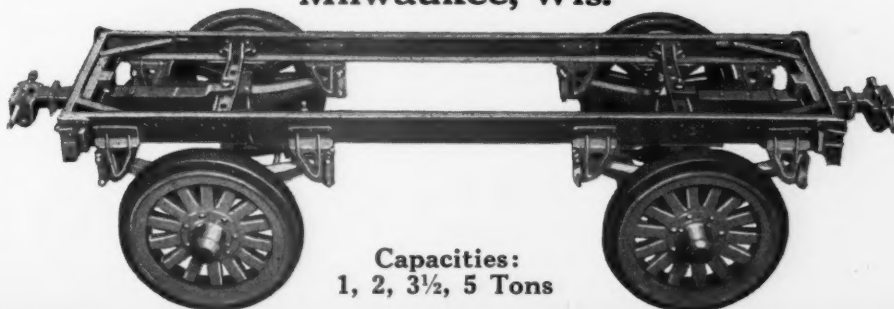
*This New Plan speeds up business—because it enables your dealer organization to give customers a complete service.*

*Write for Complete Details*

### Superior Features of Biggam Trailers

Reversible—can be pulled or pushed from either end. Automatic Couplings prevent injury to operators. Swivel Tongue permits trailers to be backed into buildings, blind alleys, sand pits, etc. Automatic Steering—Accurate Tracking—Automatic Reversing Spring Suspension.

**The Biggam Trailer Company**  
Milwaukee, Wis.

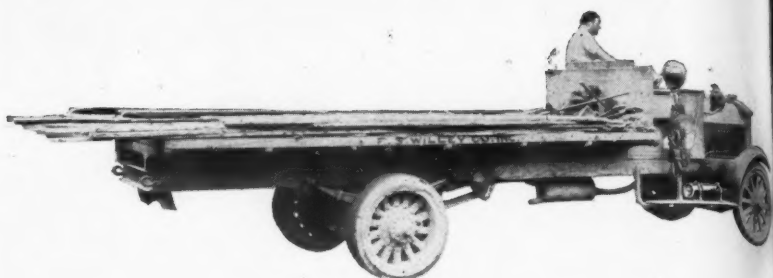


Capacities:  
1, 2, 3½, 5 Tons

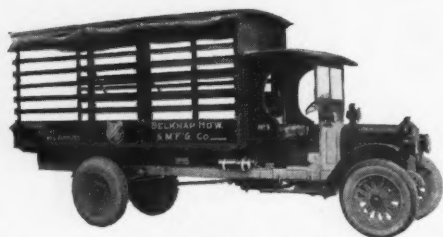
# BIGGAM TRAILERS



Rumely



Federal



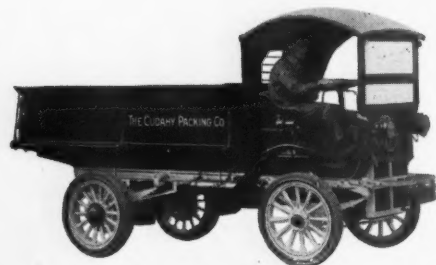
Republic



Armleder



Brockway



Autocar

## Lighting Equipment for Ar

ON every highway in America Prest-O-Lite Gas is day-lighting the road for commercial cars of all kinds—every night and without failure.

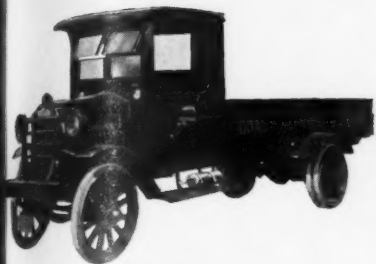
Prest-O-Lite Gas stands the banging of rough roads as no other system can. Nothing to break, wear out, jar off or get out of order.

Prest-O-Lite Gas is legal everywhere. Costs less to install and less to maintain. Put on old trucks or new; then there's nothing to buy but the gas.

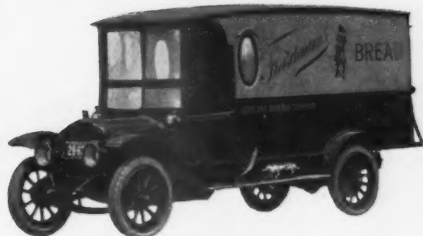
A single tank keeps two headlights and tail lamp burning continuously thirty hours or more.



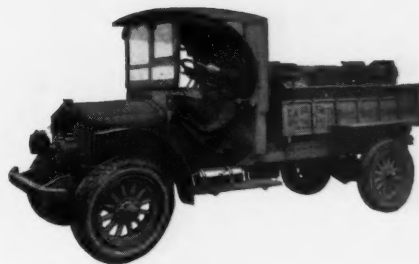




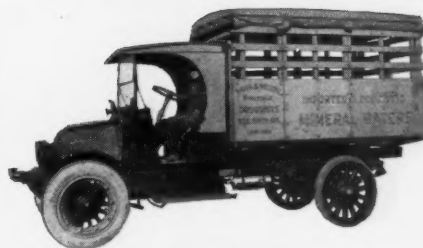
Traylor



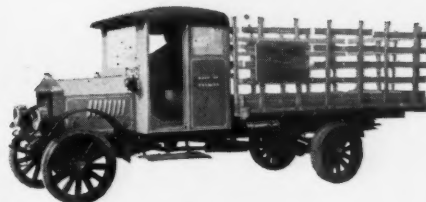
White



Garford



International



Selden



Pierce-Arrow



Mack

## America's Best Trucks

### See the New Prest-O-Lite Tail Lamp

Clean, smokeless, dependable. Really protects; shows license number for full legal distance. System is complete: headlights, tail lamp, tank and necessary fittings.

More than 22,000 service stations and garages exchange full tanks for empties. You pay only for the gas.

Oldest and largest automotive service in America.

### THE PREST-O-LITE CO., Inc.

*Small Tank Sales Dept.*

**General Offices:** Carbide and Carbon Bldg., 30 E. 42nd Street, New York; 599 Eighth Street, San Francisco

**In Canada:** Prest-O-Lite Company of Canada, Limited, Toronto

There is a complete line of Prest-O-Lite appliances, such as Torches, Soldering Irons, Paint Burners and the like to be used with the Prest-O-Lite Gas Tank for soldering, brazing, etc. Prest-O-Lite Gas is not only the best truck light, but it is a clean, economical and highly convenient fuel for many repair purposes.



# The Fable of a Broken Part

**Q** And now in the Motor Truck Industry abideth these three—Production, Sales and Service—and the greatest of these is SERVICE.

For what shall it eventually profit a Dealer to sell a Motor Truck if he cannot keep it on the road when break-downs occur?

For an Unserviced Motor Truck has but a little time to labor and then all is idleness. In the morning it goeth forth on its day's run, but in the evening it cometh not back.

Like the Prodigal Son, it tarrieth in a Far Country waiting for a Service Car to tow it to the Dealer's Repair Shop.

**Q** And when the Repair Shop finds the trouble it sends it to a Machine Shop around the corner, which has the right equipment that the Dealer's Repair Shop lacks.

In the meantime, the Truck's owner returns and makes diligent inquiry about its whereabouts. He phones the Dealer and finds that he cannot do the work, but must depend on a busily engaged Repair Shop down the street. Then terrible is his wrath to behold.

"That Truck is only ten weeks old," he exclaims. "Why, oh, why did I buy from a Dealer who lacks complete equipment in his Repair Shop? Now must I depend on a small Machine Shop filled up with work and wait my turn, while my business halts and my Truck eats off its head in idleness. And every time my Truck balks, time and money will be wasted because the Dealer does not have the right Tools and Machinery in his Shop."

**Q** And the Owner fares forth upon the Highways and to every man of high and low degree he tells his tale to unburden his overwrought feelings. For know ye full well, brethren, that a pleased customer may hold his tongue and seldom praise, but an angry customer can never hold his wrath.

And among his hearers are those who need Trucks and have decided to buy Trucks, and they give the Condemned Dealer a Wide Berth.

**Q** For what shall it profit a Dealer to hire an Army of Kuppenheimers to spellbind honest business men if he fails to have the right Shop Equipment to keep the Trucks, that the Kuppenheimers sell, out on the road?



**Q** And what shall it gain for any Dealer to invest his Money in a Showy Display Room and Bushy Palms and a Colored Gentlemen in Livery to open the Door if he must depend on outside Repair Shops for service attention to his customers?

For first impressions are not always lasting and the Dealer who retains his customer's good will renders quick service on repairs through the use of modern Service Station Equipment.

**Q** For, verily, to have or not to have the right Tool or Machine in his Repair Shop when a Truck breaks down and is wanted quickly, is like the one small shoulder strap button on Milady's décollete evening gown—if it's there, *all is well*—if it's not, *all is Ruin!*

THE SERVICE STATION EQUIPMENT NUMBER  
OF THE COMMERCIAL CAR JOURNAL  
WILL BE PUBLISHED APRIL FIFTEENTH

## A BIG ISSUE ON A BIG SUBJECT

The more than 10,000 subscribers to the COMMERCIAL CAR JOURNAL will await it with interest and anticipation. They know it will be full of practical suggestions and money-making ideas. They know it will broaden their viewpoint and uncover angles on this question of Service that many of them never saw before.

And it will! There will be valuable articles on service station operation, service station equipment, photographs and descriptions of special equipment designed by ingenious service managers, that has reduced costs and labor.

The contents of this issue will make business for you. It will be a *Big Buying Number*. COMING at a time when most equipment is purchased anyway; FOCUSING the attention of buyers on the subject of equipment; CONVINCING them of the necessity for efficient equipment; ANIMATING them with an impulse to buy NOW—most of these buyers will naturally turn to the advertising pages and make their selections there.

Will they see your product at this important time—when they are ready to buy? They *will* if you display it in representative space in this issue and tell buyers how it saves time or labor or makes money for them.

Don't overlook this big opportunity! Capitalize on the interest aroused among these 10,000 men, the very cream of the truck trade—all quantity buyers—by the COMMERCIAL CAR JOURNAL—on the purchase of complete and efficient service station equipment.

### COMMERCIAL CAR JOURNAL

PRE-EMINENTLY DOMINANT

MARKET and 49th STS., PHILADELPHIA, PA.

# Gill

## One-piece Piston Rings

Price  
Reduced to  
**75¢**



## reduce fuel consumption

**BECAUSE:** they are *individually* cast from a special gray iron that retains its tension, elasticity, and vitality under all the intense heat and terrific stress and strain of piston ring service. Gill Piston Rings, under all conditions and for thousands of miles, exert an all-around, uniform, leakless contact with the cylinder walls. They hold *all* of the fuel in the combustion chamber where *all* of it can be compressed into power. Where there are Gill Rings there is no waste.

THE GILL MANUFACTURING COMPANY,  
8300 South Chicago Avenue, Chicago, Illinois

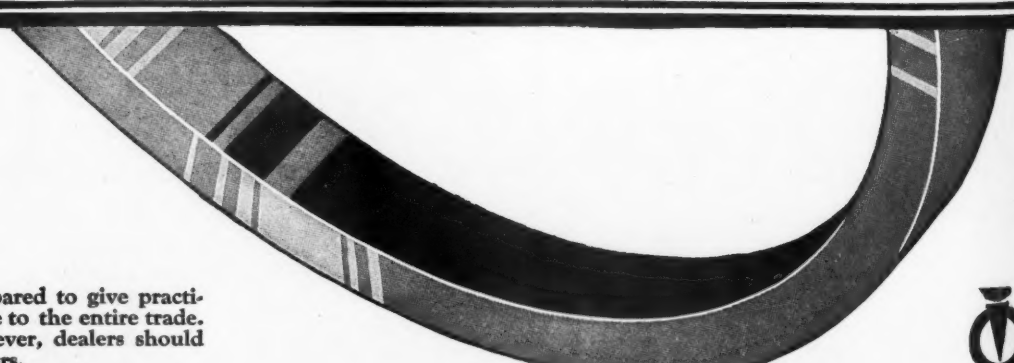
Canadian Manufacturer:  
BROWN ENGINEERING CORPORATION, Limited  
Toronto, Ontario

Sole Export Agents:  
AUTOMOTIVE PRODUCTS CORPORATION  
Woolworth Building, New York, N. Y.



*Identify the Gill  
One-piece Piston  
Ring by the joint,  
but do not measure  
its merit by  
the joint alone.*

**39** Branch Offices prepared to give practically 24-hour service to the entire trade. Whenever possible, however, dealers should order through their jobbers.







## We act as the Service Dept. of Timken-Hyatt and New Departure

—and in this capacity we perform three very definite services for you.

We carry a complete stock of bearings at all times and can provide you with any Timken, Hyatt or New Departure bearing that has ever been used in any make of motor car, truck or tractor.

Every one of our 32 branches and approximately 1,000 distributors has complete factory records which serve as your information bureau on bearings. We can tell you immediately just what bearing is required for any part of any car.

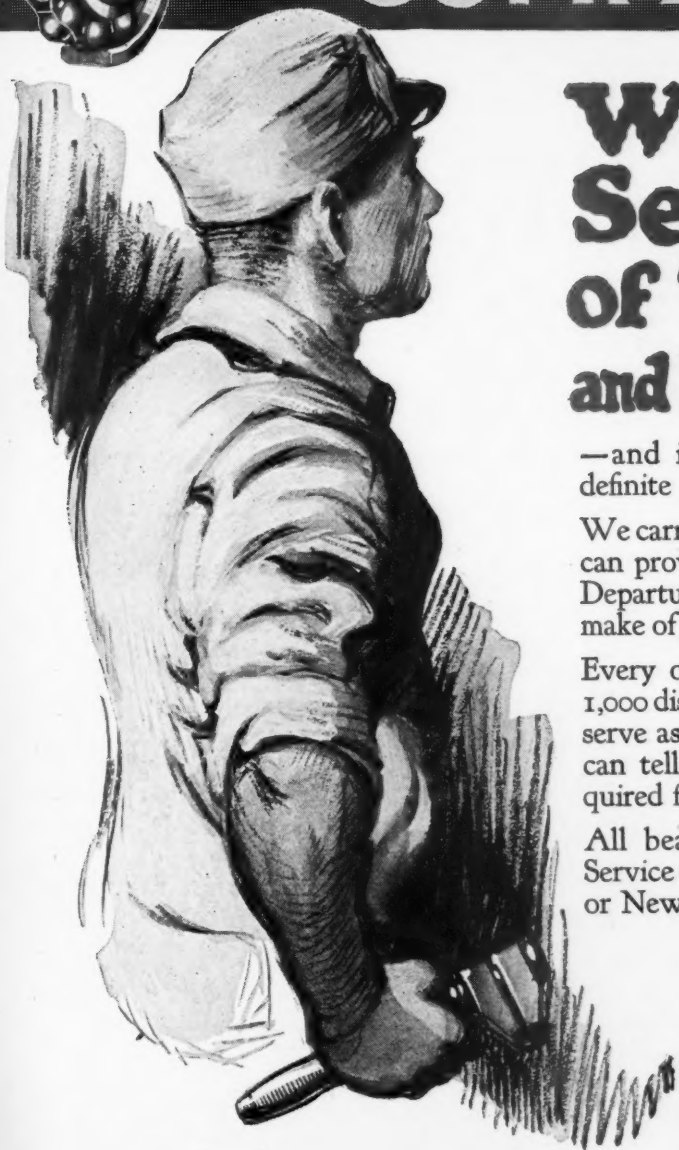
All bearings sold to you through the Bearings Service Company are genuine new Hyatt, Timken or New Departure bearings.

*And remember, the Bearings Service Company is the only organization capable of giving this complete service on these three leading makes of bearings.*

**BEARINGS SERVICE COMPANY**

*Main Offices: Detroit, Michigan*

*Branches in Principal Cities*



# THE GENERAL CORD TIRE



*—goes a long way  
to make friends*



## What a tire factory's Turnover means to Truck Owners

More than half of all General Tires go into commercial service, but there is a still better indication of this tire's real worth in a study of its factory's turnover. General Tire's annual turnover is nine times its common stock. A profit of only three per cent on each turnover would pay all of General's preferred dividends, all taxes and similar expenses, and still leave very satisfactory dividends for the common

stock. It is not necessary to cut quality to make a profit from the manufacture of General Tires.

You'll turn to General, too, if you will investigate the strength, and standing, and success of the General organization in the rubber industry. As a business man you will realize that the strength of a tire-maker is the best indication you can have of the strength of his tires.

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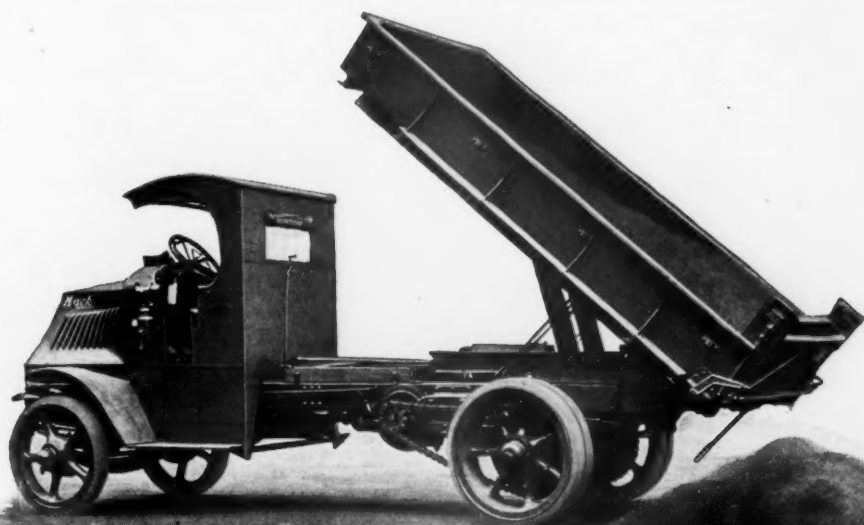
THE GENERAL TIRE AND RUBBER COMPANY

Dept. A-3

AKRON, OHIO, U. S. A.

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# Which Truck Shall You Handle



Capacities:  
1½ to 7½ tons.  
Tractors  
to 15 tons.

**H**OWEVER successful you may be as a salesman, the merits of the truck you choose to handle will mean everything to you in the long run.

Most men demand a product about which there is really something to say, a product with an unassailable record behind it, backed by an organization that lives up to the spirit as well as to the letter of its word.

The Mack truck is such a product, embodying twenty-two years of continuous development and backed by such an organization.

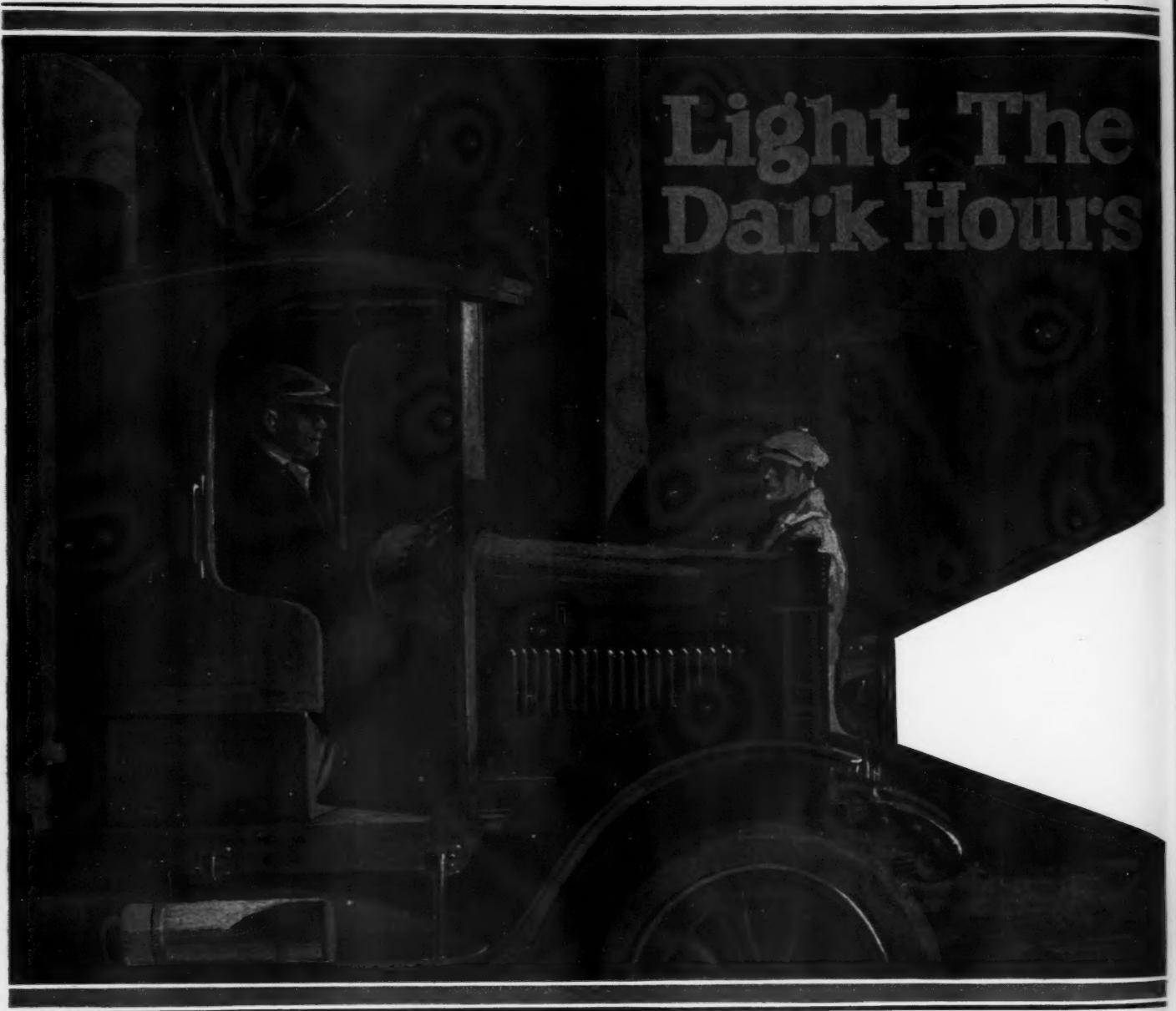
The complete Mack line is the most comprehensive manufactured today and there is none more highly regarded. In making *your* choice, consider well the prospects of long-run success, rather than a short-lived "flyer".



MACK INTERNATIONAL  
MOTOR TRUCK  
CORPORATION

## PERFORMANCE COUNTS

# Victor



No. 404  
Heavy-Duty Head Lamp



No. 141  
Search Lamp



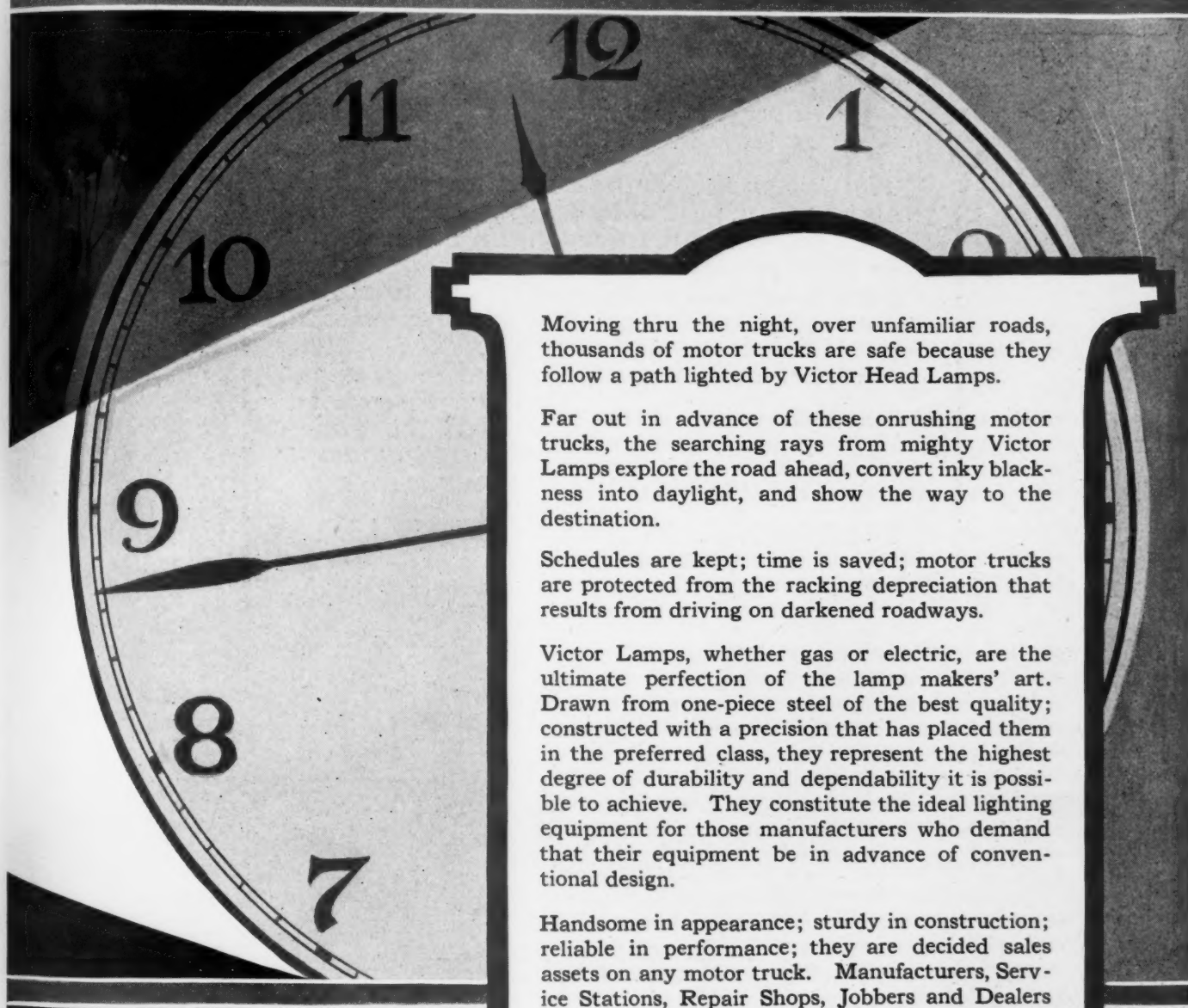
No. 400 Head Lamp



No. 403 Head Lamp



# GAS LAMPS



Moving thru the night, over unfamiliar roads, thousands of motor trucks are safe because they follow a path lighted by Victor Head Lamps.

Far out in advance of these onrushing motor trucks, the searching rays from mighty Victor Lamps explore the road ahead, convert inky blackness into daylight, and show the way to the destination.

Schedules are kept; time is saved; motor trucks are protected from the racking depreciation that results from driving on darkened roadways.

Victor Lamps, whether gas or electric, are the ultimate perfection of the lamp makers' art. Drawn from one-piece steel of the best quality; constructed with a precision that has placed them in the preferred class, they represent the highest degree of durability and dependability it is possible to achieve. They constitute the ideal lighting equipment for those manufacturers who demand that their equipment be in advance of conventional design.

Handsome in appearance; sturdy in construction; reliable in performance; they are decided sales assets on any motor truck. Manufacturers, Service Stations, Repair Shops, Jobbers and Dealers may obtain complete information about the Victor Line by addressing

**The Corcoran-Victor Co.**

712 READING ROAD  
CINCINNATI, OHIO

EXPORT OFFICE: 30 WATER ST.  
NEW YORK, N. Y.

Cable Address: Widbloco  
New York

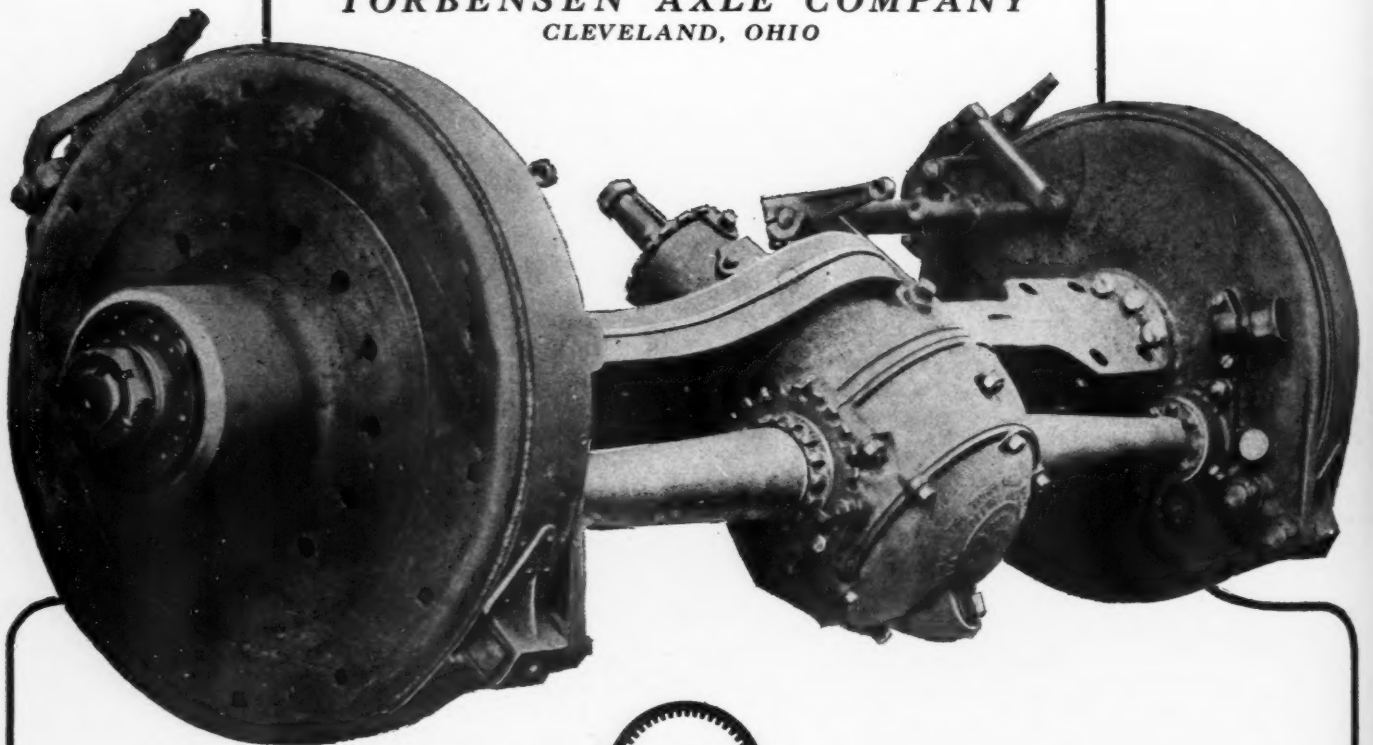


No. 460 Tail Lamp

# TORBENSEN AXLES

*The internal gear principle, as perfected and applied by Torbensen, results in an axle unequalled in strength, unequalled in light weight, and unequalled in the percentage of driving power delivered to the driving wheels. All working parts of the Torbensen Axle are enclosed, fully protected from dust, dirt and mud, and amply lubricated. Truck owners today, all over America, are proving that the Torbensen Axle improves truck performance, lengthens truck life, and lowers truck costs.*

**TORBENSEN AXLE COMPANY**  
CLEVELAND, OHIO





# Extra Advantages Enjoyed by Acme Dealers

**I**N the Acme Truck are joined the *specialized* efforts of *many* organizations. For each major unit in this truck of super-service is the master product of a separate organization specializing on that product alone.

Every Acme you sell has the backing of the Acme Motor Truck Company. And back of this company are the immense organizations building the individual units used in the Acme.

When you handle the Acme you link your business with the combined success of leaders in the automotive industry.

You have behind you a *permanent* organization — financially strong and sound. You can build for lasting, growing trade.

You have a line of Acmes to meet every hauling need of your trade. And every Acme sold helps to sell

another. Acme owners buy more Acmes—convincing proof of best service at lowest cost.

Acme is right in price. It has always been below the average price of other worm-drive trucks—due to distinct manufacturing advantages.

## Made in Seven Sizes

### Send for the Acme Dealer Franchise

Our new franchise meets your selling problems. It points the way to your greatest money-making opportunity. It takes care of every known condition in truck selling. Responsible business men are invited to write for particulars. Don't pass this chance. Write today.

**Acme Motor Truck Company**  
496 Mitchell Street      Cadillac, Michigan

# ACME

On the radiator of every Acme is this seal of dependable performance.



Trade - Mark Registered  
U.S. and Other Countries



This Acme Truck, owned by Consumers Ice Co., Fort Wayne, Indiana, is doing daily work in its sixth year of economical service. It has covered over 100,000 miles, with repairs less than \$100.



"Concentration on a single goal made Miss America the world's fastest boat, and Wood-Detroit Dumping Equipment the best."

*Gar Wood*



## *Built by "Gar" Wood*

Wood-Detroit Hoists and Steel Bodies—dependable, powerful and speedy—have helped make thousands of miles of improved highways, saving time, labor and money; that is the reason they are used almost exclusively in this big field.

# WOOD

**DETROIT**

With Vertical, Horizontal and Underbody types, and a full line of special and standard bodies, there is Wood-Detroit Equipment for every need.

Tell us your problem—we will furnish you with definite recommendations as to style and size and quotation on your needs.

## Wood Hydraulic Hoist & Body Co.

4196 Bellevue Avenue

DETROIT, MICH.



# WALTER MOTOR TRUCKS

"100% TRACTION"



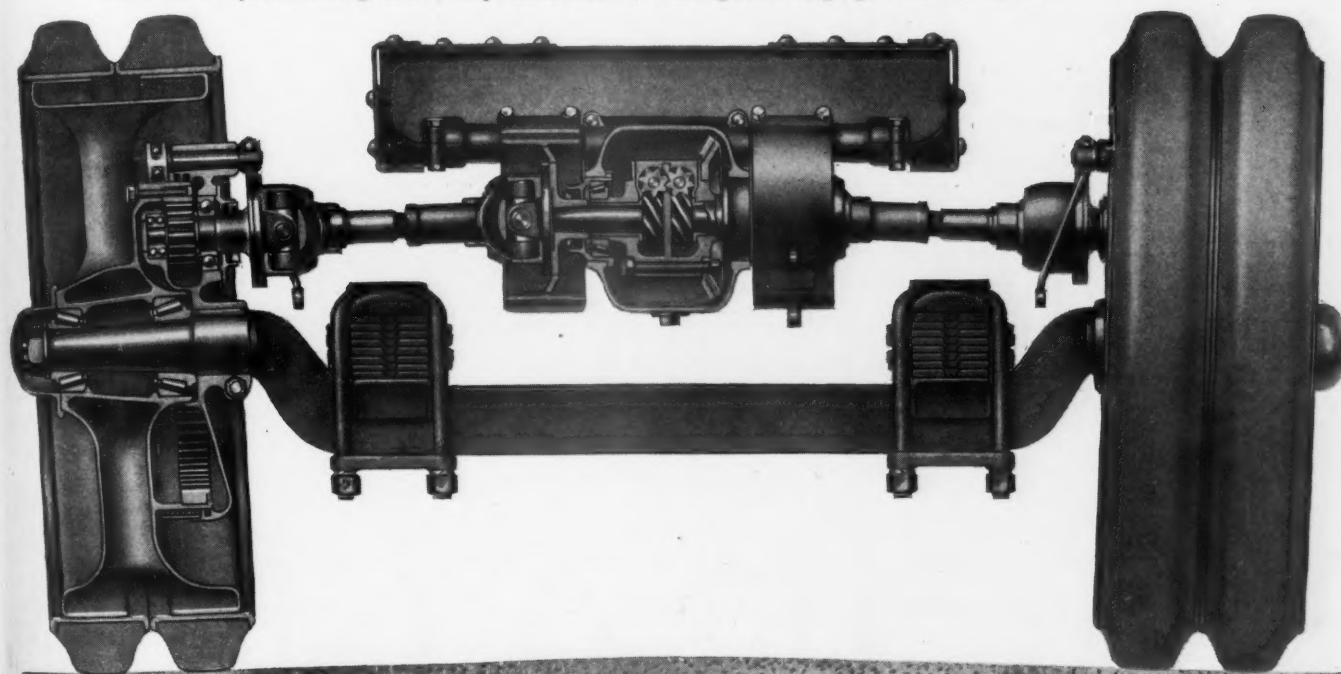
2 1/2 TONNER WITH SPECIAL DUMP BODY

With the addition of the new 2 and 2 1/2 Ton Models to the 3 1/2, 5 and 7 Ton Models, the Walter Motor Truck Company offers a complete line of transportation units to meet all heavy-duty service conditions.

These new models are equipped with the same patented AUTOMATIC LOCKING DIFFERENTIAL and SUSPENDED DRIVE which has demonstrated its superiority in the larger models.

The combination of the Powerful TORQUE MOTOR, Efficient Final Drive and LOCKING DIFFERENTIAL, results in a motor truck which is capable of hauling the pay load through all sorts of adverse road conditions.

We invite complete investigation by responsible dealers desiring to sell high-grade motor trucks.



SECTION SHOWING WALTER SUSPENDED DRIVE AND LOCKING DIFFERENTIAL

WALTER MOTOR TRUCK CO., 227 West 61st Street, New York, N. Y.

# MORANDS ARE BUILT FOR HEAVY DUTY



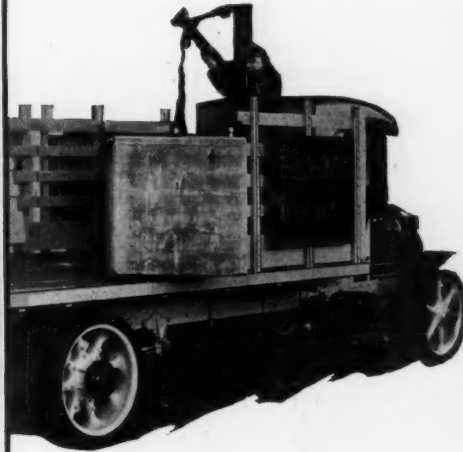
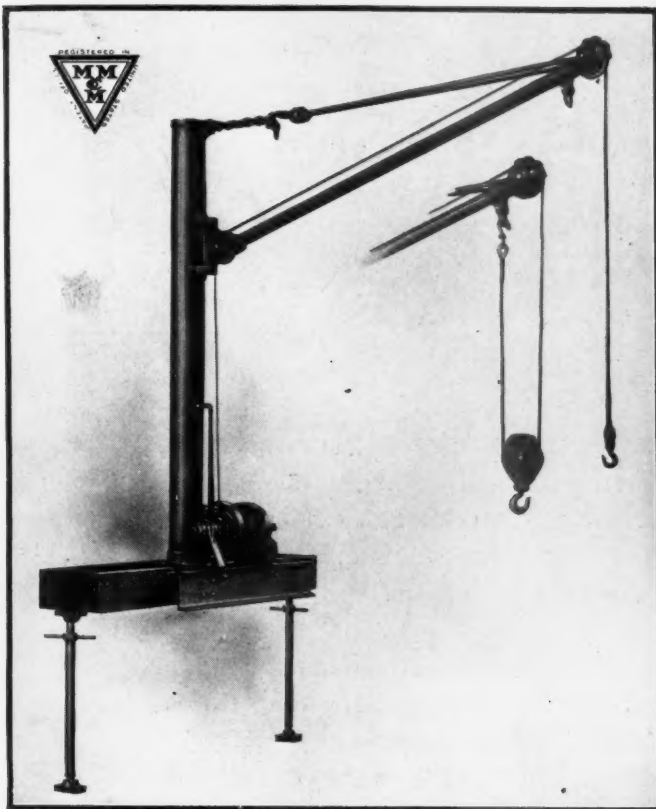
MACK TRACTOR AND BAXTER TRAILER OWNED BY BAXTER MOTOR TRANSPORT CO.

**T**HE heavy-duty truck suffers from the terrific vibration resulting from the impact of its great weight on every rut and bump in the road. This constant pounding of a great, heavy mass means that something must break eventually—and something usually does. That is why repair bills pile up. Morand Cushion Wheels eliminate the vibration, and protect the truck from constant repairs. Morand Cushion Wheels are made in two types. The Morand Standard is a complete unit that replaces truck wheels of any standard make; the Morand Demountable Cushion Element is interchangeable with, and replaces any S. A. E. giant pneumatic without wheel change.

MORAND CUSHION WHEEL CO.  
800-902 SOUTH MAY STREET  
CHICAGO, ILLINOIS

# MORAND CUSHION WHEELS





*THIS illustration shows Mead-Morrison No. 916 Crane mounted on three-ton Packard truck. This combination permits of the loading and carrying of cut stone blocks weighing from 2000 to 3000 pounds.*

## A CRANE THAT INCREASES A TRUCK'S USEFULNESS —AND THE DEALER'S SALES OPPORTUNITIES

**T**HE true function of a motor truck is transportation. Time wasted in loading and unloading through old-fashioned methods lessens the truck's productiveness.

Every owner of a truck is a prospect for Mead-Morrison Winches and Cranes—time and labor-saving devices for motor trucks. Their value is easily demonstrated to the man whose trucks are lying idle more than half the day—while loading or unloading.

The Mead-Morrison No. 916 Truck Crane is a

leader in the Mead-Morrison line. It is particularly adaptable for handling barrels, bales of wool or cotton, heavy castings, cut stone and other building materials. When not in use the boom and mast can be removed and stowed away. The winch can also be used for pulling heavy objects onto the truck over the rear end, and other general light rigging work of all kinds.

The Winch has single-lever control and automatic brake, and the Crane is provided with levelling screws to relieve the chassis of strain.

**322 Prescott St. MEAD-MORRISON East Boston, Mass.**  
**MANUFACTURING COMPANY**

### Distributors

American Truck Body Co., Inc., Martinsville, Va.	H. W. Hudson, Columbus, Ohio	Motor Truck Equipment Co., Philadelphia, Pa.	Springfield Commercial Body Co., Springfield, Mass.
Auto Truck Equipment Co. Pitts- burgh, Pa.	Hydraulic Hoist Mfg. Co., Daven- port Iowa.	National Steel Products Co., Kansas City, Mo.	Springfield Commercial Body Co., Cambridge, Mass.
Edward R. Bacon Co., San Fran- cisco, Cal.	Interboro Hoist & Body Corp., Long Island City, N. Y.	Ed. Ryan, Ardmore, Oklahoma	Virginia Truck Body Corp., Rich- mond, Va.
Edward R. Bacon Co., Los Ange- les, Cal.	Kunkel Service Co., Baltimore, Md.	The Truck Engineering Co., Cleveland, Ohio	Wisconsin Motor Parts Co., Chicago, Ill.
Canadian Mead-Morrison Co., Ltd., Montreal, Que., Canada.	A. Lange Mfg. Co., Milwaukee, Wis.	The Truck Service Co., Cedar Rapids, Iowa.	Robert G. Wright, Des Moines, Iowa
Hummel Mfg. Co., St. Louis, Mo.	Mansfield Steel Corp., Detroit, Mich.	Texas Motor Truck Equipment Co., Dallas, Texas	

# MEAD-MORRISON

## Winches and Cranes

# SCINTILLA

**P**RESENT truck owners are future truck purchasers, and the manufacturer who persistently refuses to heed just criticism on the part of the owner will, sooner or later, lose and deserve to lose his business.

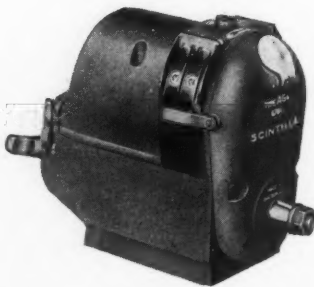
The delays and inconveniences, which truck owners have experienced so frequently in the past, due to "ignition trouble," are causing the manufacturer to look for relief from this constant source of dissatisfaction.

Scintilla, the magneto made in Switzerland, offers this one outstanding feature: It delivers unfailing ignition under every condition of service and over an unusually long period of time.

Far-seeing truck manufacturers will equip their trucks with Scintilla, which is recognized as the highest grade and most dependable ignition system built.

*Booklet Sent on Request*

*The Magneto  
with the Rotat-  
ing Magnet*



*and the  
Stationary  
Winding*

SCINTILLA MAGNETO CO., INC., 225 WEST 57TH ST., NEW YORK



**T**HE maker's name on a motor car or motor truck is an assurance that the vehicle is as represented.

The reliable vehicle thus makes its builder's name a guarantee.

Sheldon, Salisbury, Parish and Spicer on vital automotive parts have in like fashion become guarantees of quality.

And it is significant to note that they are linked with most of the "guarantee-names" in the industry.



# SALISBURY



Axles for Passenger Cars

# Sheldon



Axles for Motor Trucks

# Sheldon



Springs for Motor Cars and Trucks

# Parish



Heat Treated Frame

# Spicer



Propeller Shaft

Salisbury Axle Co.

Sheldon Axle and Spring Co.

Parish Mfg. Corp., Reading, Pa., and Detroit, Mich.

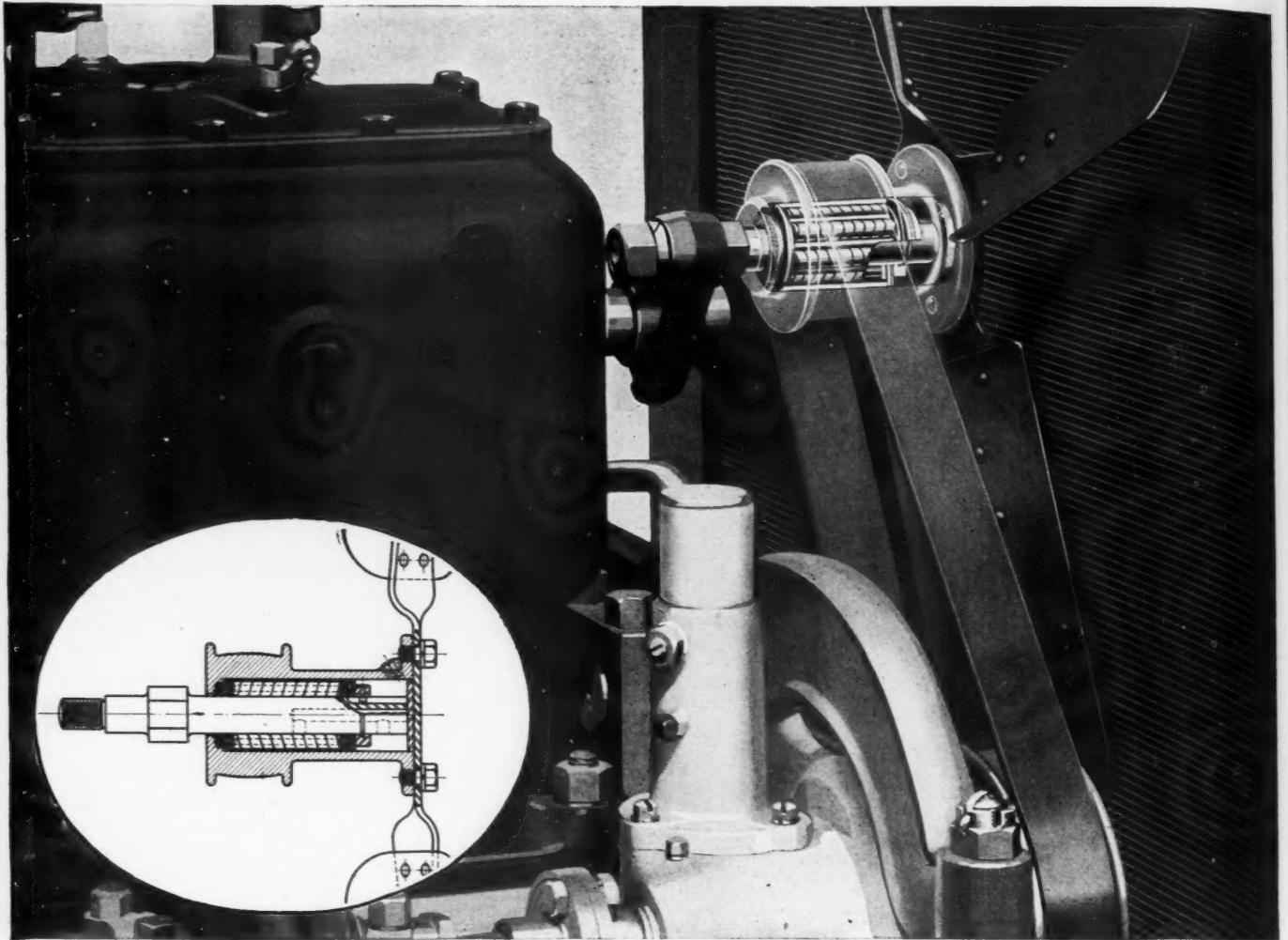
Spicer Mfg. Corporation

Jamestown, N. Y.

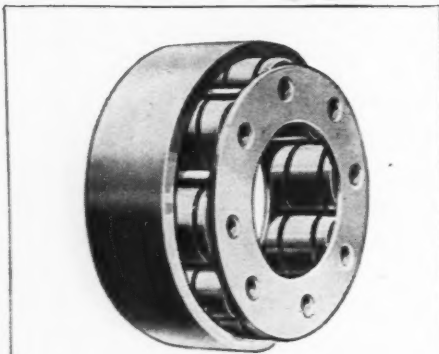
Wilkes-Barre, Pa.

South Plainfield, N. J.

C. A. DANA, *President*



## Hyatt Roller Bearings Insure High Speed Fan Dependability



### *In Operation*

Hyatt Roller Bearings give high speed fans that certainty of performance so essential in keeping the cooling system of the motor at highest efficiency.

Being self-oiling and quiet, they render a superior service in fans functioning under the most adverse conditions. Their ruggedness and simplicity of construction makes them absolutely dependable and insures against noise and need for adjustment.

Insist that you have a Hyatt equipped fan on your next truck.

The cooling fan on this heavy-duty truck motor is driven continuously at double engine speed, so that the motor may not over-heat. It is important, therefore, that its construction insures constant, regular performance.

A single Hyatt bearing with small diameter rollers operating directly upon a hardened spindle, takes all of the belt pull and is long enough to steady the fan blades. The end thrust, very small in amount, is taken through steel and bronze plates against a stationary collar. No bearing adjustment, either radial or thrust, is necessary or possible.

This construction shows how a single Hyatt Roller Bearing solves the problem of mounting the high-speed fan in a simple, dependable manner. Used in thousands of trucks, this fan mounting is proving perfectly reliable and absolutely quiet.

Hyatt Roller Bearing Company, *Motor Bearings Division*, Detroit, Mich.

# HYATT QUIET BEARINGS





## "I Didn't Know Such an Engine Was Commercially Available"—

said one of America's leading race drivers at the New York Show, as he gave us his order for the new Midwest Model 409 to be installed in a passenger car and taxi-cab he is about to announce.

Manufacturers of trucks, taxi-cabs, speed wagons and passenger cars can now get a Midwest engine identical in design and workmanship with the larger sizes that have shown such superlative performance ability in America's leading tractors, motor busses and trucks.

A record of this engine's performance (Model 409) is now available for manufacturers interested in securing an engine that, to our knowledge, will outperform any other engine of similar bore and stroke.

Get our latest literature on this engine and then compare it piece by piece with other engines commercially available.

We are prepared to furnish Midwest engines for speed wagons, and all sizes of trucks. In all manner of transportation service—where performance and economy count *most*—Midwest engines should be your choice.

Interesting literature on all sizes of Midwest engines is just off the press. Where shall we send it?

Please address Department 15.

**MIDWEST ENGINE COMPANY**

INDIANAPOLIS, U. S. A.

# MIDWEST

**TRUCK and TRACTOR ENGINE**

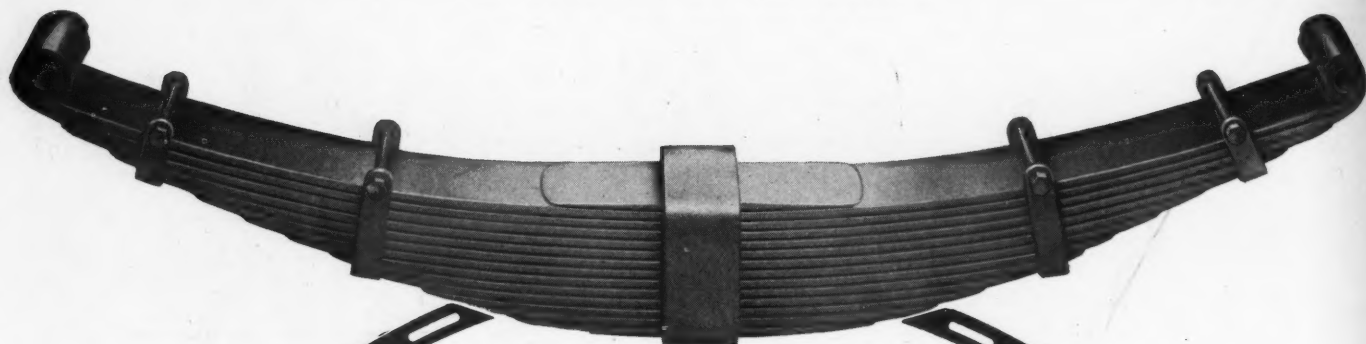
There is as much difference between every part of a Midwest engine and an ordinary engine as there is between the Midwest connecting rod shown above and the ordinary rod.

Unlike an ordinary rod, the Midwest connecting rod is designed to take care of the tremendous stress of heavy duty work. Note the massive taper of the rod as it gets to the bearing.

A Midwest rod is shimless and grooveless. The bearing is cast in the rod by centrifugally throwing the hot metal into the forging, thus insuring against porous spots and producing a 100% bearing.

The connecting rod supports the **FULL LENGTH OF THE BEARING**, which prevents bell-mouthing and consequent loss of lubricant.

An **ORDINARY** rod would never work in a Midwest engine because Midwest engines are designed—not adapted—to meet truck, bus, taxicab and tractor requirements.



## You Can Stake Your Reputation on Them

Your reputation as a motor truck manufacturer, distributor or dealer is the net result of the performance of the motor truck that you build or represent. It is, therefore, an imperative necessity that the units in your truck be of such superior caliber that they enable it to earn the appreciation and good-will of His Majesty—the Buyer.

If you select Spring-Perch Springs, you will have the assurance of dependable spring operation, under all conditions, as long as your trucks are on the roads.

For nearly eighty years this organization has been making springs. We have followed the steady development of transportation in all its phases, up to the present development of the motor truck.

Today, our Spring Engineering Experts stand ready to assist in designing the proper Spring-Perch Spring for your particular motor truck.

**COMPOUND SPRINGS FOR BUS SERVICE**  
Suitable for Their Greatly Varying Load Conditions

**BANDED SPRINGS FOR TRUCKS**  
Especially Desirable for Hotchkiss Drive. Special  
Designs for Speed Wagons

**SPRING PERCH COMPANY**

*Makers of Springs Since 1843*  
STRATFORD CONNECTICUT

# **SPRING-PERCH**



# Are You Selling Less Than Maccar Service?

Unless you can offer buyers a truck which will not be put out of operation by power-plant troubles—you sell less than Maccar Service.

The Maccar power plant is demountable as a unit. In less than 30 minutes it can be taken down, replaced by another unit—and the truck's ready to pull out.

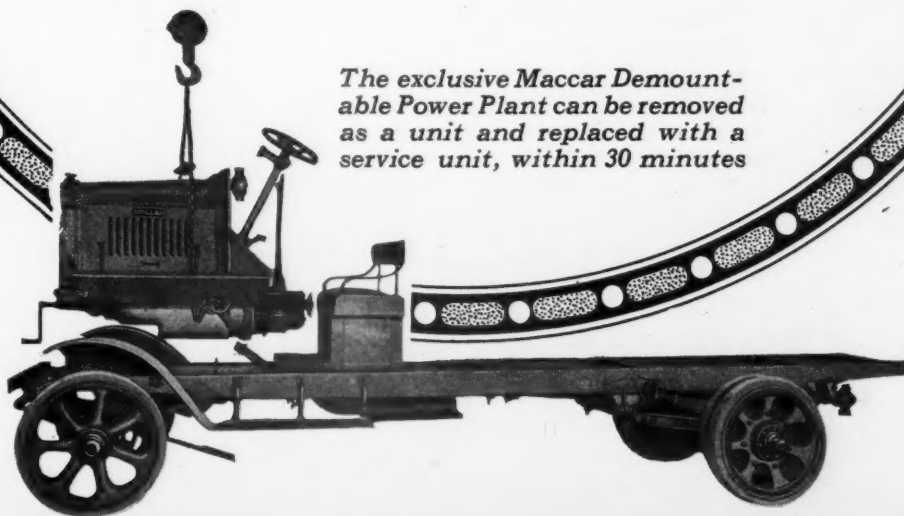
*This means continuous transportation service—for every working day in the year. Exclusive Maccar service. The kind of service which buyers cannot receive from any other make—no matter how high priced.*

Your success as a truck dealer depends on the Service you sell. Can you afford to sell less than Maccar Service?

*Think it over — then write us about the Maccar Truck Franchise.*

**MACCAR TRUCK CO.**  
Scranton, Pa.

*The exclusive Maccar Demountable Power Plant can be removed as a unit and replaced with a service unit, within 30 minutes*



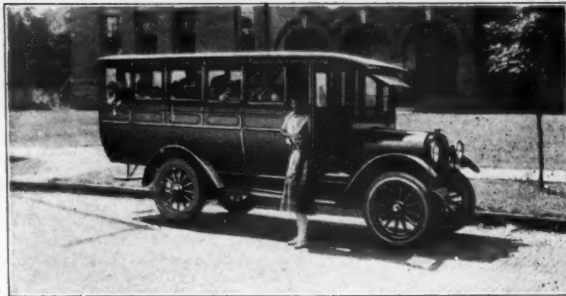
# MACCAR

# McKay *Bus and School Bodies*

25 years of quality construction behind us as an organization.

We are specialists on Bus work and build in any capacity from 10 to 50 passenger in either side or cross-seat type.

Write Us for Catalogue, Prices and Full Particulars

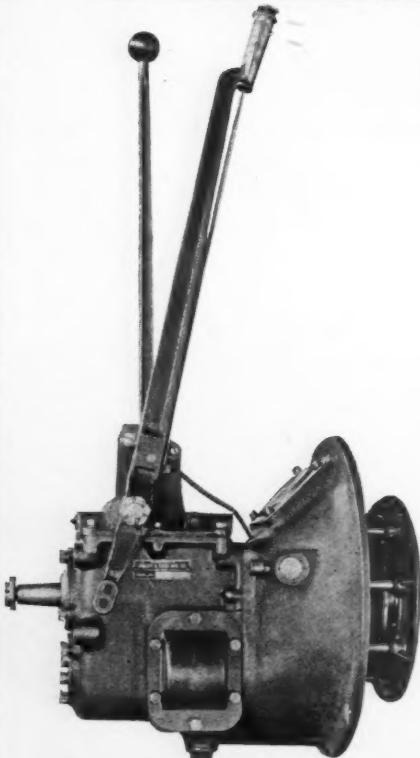


**McKay Carriage Co.    Grove City, Pa.**

*"One Grade Honestly Made"*

# *FULLER* *Transmissions*

## **SPEED TRUCK TRANSMISSIONS**



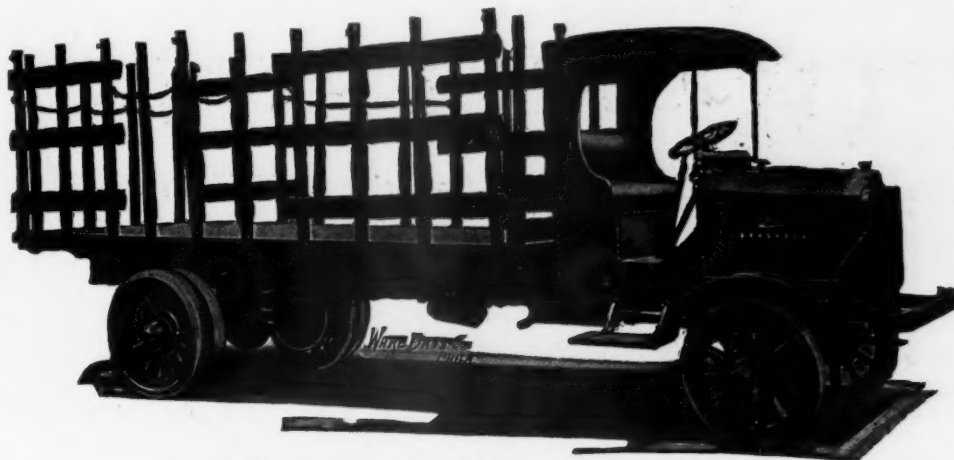
When pneumatic tires had proven to be a success Fuller & Sons Manufacturing Company designed transmissions for Speed Trucks. These models have a lower gear ratio to offset the larger tire diameter.

They have a place to mount tire pumps AND, above all, have the Sturdiness that has built up the reputation of Fuller Transmissions.

**Fuller & Sons Manufacturing Co.**  
KALAMAZOO, MICHIGAN

New York  
Detroit

San Francisco  
London



Rowe Model F. W., 5 Ton Chassis Equipped With Stake Body

## At Every Stage of Transportation ROWE MOTOR TRUCKS

are revealing to satisfied owners how indispensable they are  
as the most reliable and economical form of haulage vehicle.

Capacities, 1½, 2, 2½, 3, 4 and 5 Ton

CATALOG ON REQUEST

**ROWE MOTOR MANUFACTURING CO.**  
LANCASTER PENNSYLVANIA

# ST. PAUL HOISTS

VERTICAL OR UNDERBODY

HYDRAULIC TYPE

THE ORIGINAL

QUICK DUMPING

Speed in dumping — that's one feature your customer must have in a hoist. The St. Paul Hydraulic Hoist's speed will amaze him. Easily operated by one man it dumps a 2 or 15 ton load in 30 seconds. Think of the saving in time this effects over inefficient methods requiring 40 minutes for unloading. Note that the hoist is especially designed to fit your individual chassis. A power takeoff is supplied without extra charge. Better get acquainted with the ST. PAUL HOIST'S sales possibilities — before your competitor does. *Write today.*

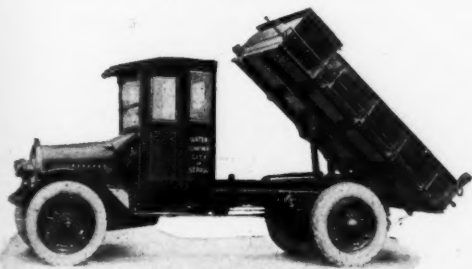
**SAME-DAY SERVICE ON REPAIR PARTS ORDERS**

Let Us Show You What *Real* Factory Co-operation Means. *Liberal Agency Proposition*

**"SUPERIOR" STEEL DUMP BODIES**

Are Surpassed by None

**AGENCIES AND SERVICE STATIONS**



Billings, Mont.; F. B. Connelly Machinery Co.  
Buffalo, N. Y.; A. D. Cutting Body Corp., 2208 Elmwood Ave.  
Cambridge, Mass.; Springfield Com'l Body Co., 80 Charles River Road  
Chicago, Ill.; Jacob Press Sons, 300 N. Halsted St.  
Cincinnati, Ohio; The Bode Wagon Co., 1649 Central Ave.  
Cleveland, Ohio; The James Holan Mfg. Co., 3809 Clark Ave.  
Dallas, Texas; Texas Motor Truck Eqmt. Co., 2100 Live Oak St.  
Davenport, Iowa; Hydraulic Hoist Co., 331 E. Second St.  
Detroit, Mich.; Hydraulic Hoist Mfg. Co., 5730 Michigan Ave.  
Erie, Pa.; E. H. Scott, 325 W. Front St.  
Kansas City, Mo.; National Steel Products, Co., 1611 Crystal Ave.  
Long Island City, N. Y.; Interboro Hoist and Body Corp., William and Henry Sts.  
Los Angeles, Cal.; Arthur L. Eaton, 3769 Moneta Ave.  
Minneapolis, Minn.; Hydraulic Hoist Co., Hennepin and 10th Ave., S. E.  
North Kansas City, Mo.; Standard Steel Works  
Oklahoma City, Okla.; American Tank Co.  
Philadelphia, Pa.; Motor Truck Eqmt. Co., 2215 Race St.  
Pittsburgh, Pa.; Auto Truck Eqmt. Co., 7501 Penn Ave.  
Portland, Ore.; Fred Dundee, Broadway and Flanders St.  
San Francisco, Cal.; Arthur L. Eaton, 49 McDougal Court  
Seattle, Wash.; Frank Waterhouse & Co.  
Spokane, Wash.; March Strickie Motor Co.  
Springfield, Mass.; Springfield Com'l Body Co., 385 Liberty St.  
St. Louis, Mo.; Rogers-Schmitt Wire and Iron Co., 1815 N. 23d St.

**HYDRAULIC HOIST MFG. CO.**

**292 Walnut St., St. Paul, Minn.**



*DROP FORGINGS Often Cheaper Than CASTINGS, Always Superior*

# DROP FORGINGS

Open Hearth or Alloy Steel Capacity 1,800 Tons Per Month

## TYPICAL TRUCK FORGINGS

CHANGED MONTHLY

Rear Truck Axle, 295 Lbs.



Overall, 90"



Front Truck Axle, 190 Lbs.

Overall, 60 1/4"

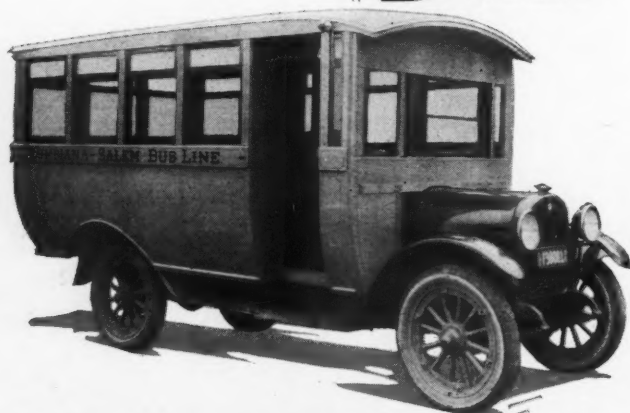
Heat Treating and Complete Laboratory Equipment

## MACHINE FINISHED CRANKSHAFTS

## UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA. (2 Miles East of Pittsburgh)

**B**UILDERS  
OF  
BETTER  
BUS  
BODIES



Type AX Body—16 Passenger—Inside width, 74"—Inside height, 71"—30" cross-seats, allowing 14" aisle at center—Rear Seat full width—Emergency Door on left side, just behind driver's seat—Folding Door, street-car type, as on this body, furnished only when inside width exceeds 72". Light above door is extra equipment. PRICE, \$930.00. DEALERS WANTED

## BUS BODIES

Any Size Any Type For Any Chassis

Our Bus Bodies Represent

REAL QUALITY at RIGHT PRICES

and Mean

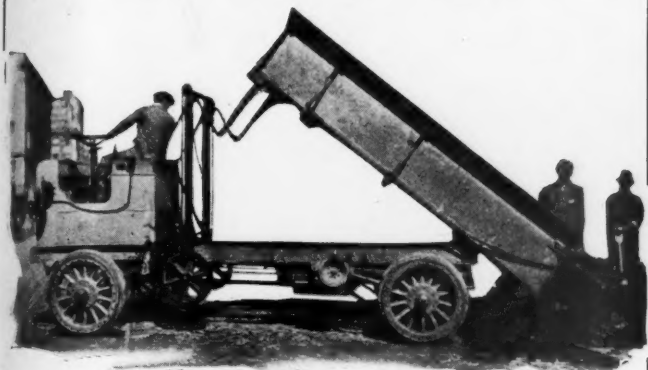
SATISFACTION TO DEALERS AND USERS

# GROVE CITY BODY & MFG. CO.

GROVE CITY, PA.

Established 1867

# 1908



*A photographic reproduction of the original Hough Mechanical Hoist from a write-up in the "Power Wagon," December, 1911.*

The two pictures show the evolution of

## THE Hough Mechanical Hoist

The period since 1908, when the first Hough Mechanical Hoist with dump body and double-action tail gate was built and sold, represents fourteen years of development and constant application of a proven mechanical principle.

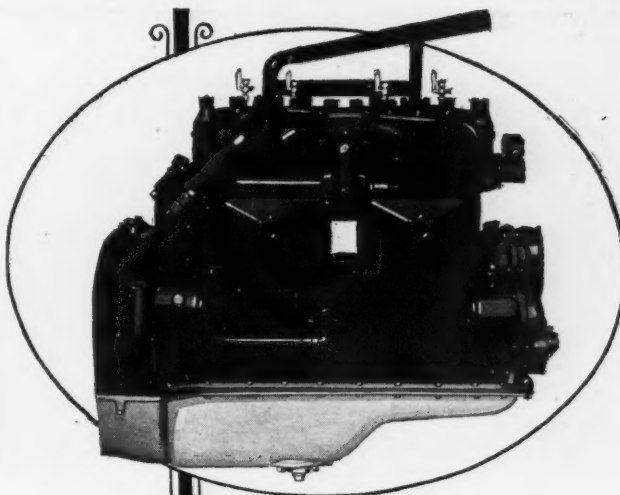
# 1922



*The modern Hough Mechanical Hoist with high-lift attachment installed on a Packard road-building truck, 1922.*

The Hough Mechanical Hoist is built in three sizes and can be installed upon any type of chassis

**HOUGH MECHANICAL HOIST CO.**  
1900 SOUTHPORT AVE. CHICAGO



## Announcing Our New Factory

Deliveries of Hinkley Heavy-Duty Automotive Engines are now being made from our new factory—the most modern and the most efficient motor-building plant in the world.

The new production facilities which we thus command enable us to build more, and even better, Engines. They also enable us to market our product at prices comparable to those of merely ordinary truck motors.

For Truck or Omnibus Manufacturers sincerely desirous of establishing their business along permanent lines, we have a vitally interesting message.

## **HINKLEY** HEAVY DUTY AUTOMOTIVE ENGINES



*New Factory of Hinkley Motors Inc., at Ecorse—Western Detroit Manufacturing District. Completed and equipped Jan. 1, 1922.*

**HINKLEY MOTORS INCORPORATED**  
Detroit

# 1867 Hoopes, Bro. & Darlington, Inc. 1922

## WEST CHESTER, PA.

*Manufacturers of High-Grade*

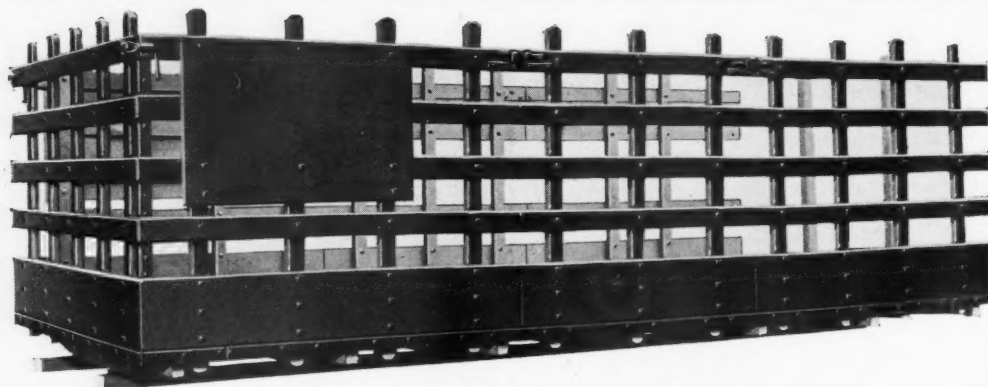
# Carriage, Wagon and Automobile Wheels

Our long years in business, as indicated above, are our guarantee of satisfaction and service rendered.

We are still giving this satisfaction and service to those firms who appreciate *high-quality* material and workmanship in their product.

We also manufacture the

# HOOPE'S METAL FELLOE WHEEL



## Columbian Standard Open Stake Body FOR HEAVY-DUTY TRUCKS

LENGTH	WIDTH	LOWER PANELS	HEIGHT OF STAKES
No. 175....12 feet	72 inches	10 inches	48 inches
No. 176....14 feet	78 inches	10 inches	48 inches
No. 177....16 feet	78 inches	10 inches	48 inches

**DESCRIPTION:** Built of hardwood throughout. Inside stake pockets. Platform bound all around by iron. Bottom stripped with band iron. Stakes in rear. Also furnished with tail gate if desired. Sections lift out. Letter board, 36" x 24" on front section. Longitudinal sills shipped separate to fit any make of chassis.

**PAINTING:** Brewster Green; other colors furnished on order.

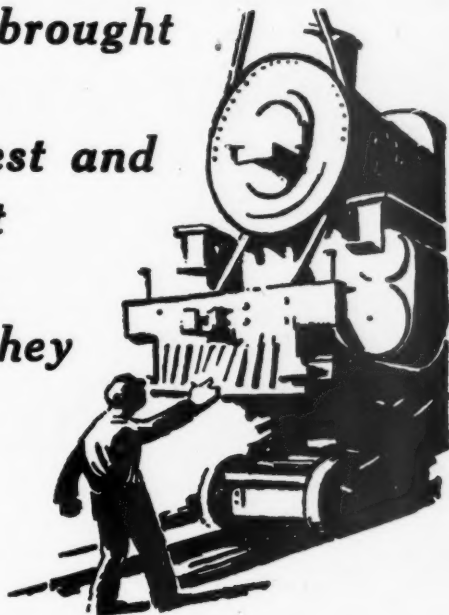
**DISTRIBUTORS:** Diamond Body Co., Philadelphia, Pa. Smith Carriage Co., Springfield, Mass. The P. & B. Sales Co., Troy, N. Y.

ILLUSTRATED CATALOG AND PRICES FURNISHED UPON APPLICATION

**THE COLUMBIA WAGON AND BODY COMPANY, Columbia, Pa.**  
SUCCESSORS TO THE COLUMBIA WAGON COMPANY, COLUMBIA, PA.



**"They brought  
me the  
Greasiest and  
Dirtiest  
Engine  
Parts they  
could  
find"**



**"I CLEANED these locomotive  
parts in a half hour MY way.  
It took them a day and a half to  
get good cleaning results THEIR  
way."**

This brief report of an Oakite Service Man happens to relate to a railroad repair shop—but it holds an interesting message on time saving for all kinds of cleaning jobs in all kinds of shops, especially as locomotive parts are so much more difficult to clean than the average job.

Saving time on cleaning work means saving money on "overhead." Labor produces more—less money is spent for cleaning materials—and the capacity of cleaning tanks is increased.

You, too, may be able to save time and money by a few changes in your cleaning methods. Many other plants have. Let one of our Service Men go over your present cleaning methods with you. Then let him give you his suggestions as to what our experience in a large number of plants has shown is the most efficient manner for cleaning your kind of work. Then judge for yourself as to whether the adoption of his suggestions will make it possible for you to spend less for cleaning.

*A postal card does not obligate you,  
but will be considered merely an  
invitation to lay our ideas before you*

**OAKITE**  
MANUFACTURED BY  
**OAKLEY CHEMICAL CO.**  
38 THAMES STREET · NEW YORK

# ZENITH



## Our Free Trial Offer

### A Money Maker for You

Buyers like guaranteed satisfaction. Our 30 Day Free Trial, money-back offer is a convincing expression of our faith in our product. It is accepted at its real value by motorists.

This offer, backed up by Zenith advertising, brings new customers into your shop. They buy other articles as well as Zenith carburetors. Our dealers' experience proves this.

The Zenith carburetor is a tried and proven money maker for dealers. Get your share of this good business. Let Zenith introduce you to these new buyers. Use the coupon now.

**There's a Zenith for Every Make of  
Truck and Car, Including Fords**

**Zenith Carburetor Company**

DETROIT, MICHIGAN

**Send the Coupon Now**

Some Exclusive Territories Are Open

Zenith Carburetor Company  
Detroit, Michigan

GENTLEMEN: I am interested in your Free Trial Sales Plan,  
and would like further information regarding a dealership or  
agent rights for my territory, which is \_\_\_\_\_

(Describe by Counties, Name, Towns and Cities)

Have been in this territory \_\_\_\_\_ years, handling

(What business line)

REMARKS: \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_





**SMITH**  
PRESSED STEEL FRAMES

Made in the Largest  
and Best Equipped  
Frame Plant in the World

**A.O. SMITH CORPORATION, MILWAUKEE**

Detroit Office  
708 Ford Bldg.

### *"Our Tests Show That They Deliver More Light"*

Said a Well-Known Truck Manufacturer as He Gave Us a Big Order

Powerful light / sightly and popular points of excellence in Dietz "Sentinel"  
Drum-Type design / great structural Electric Headlights which are arousing  
strength. These are the outstanding the interest of Truck Manufacturers.

*Write for Complete Information*

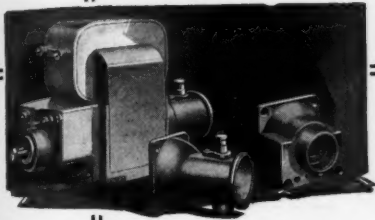
**R. E. DIETZ CO.** 60 LAIGHT ST. NEW YORK JAMES BARNES, Sales Mgr.  
Motor Truck Lamp Department  
CARTER BUILDING, ROCHESTER, N.Y.



**DIETZ**

**DIETZ "SENTINEL" ELECTRIC HEADLIGHTS**

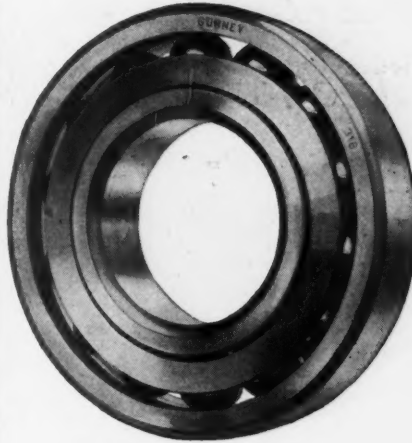
Doehler Die-Cast Parts for  
an Automotive Ignition Unit



The right price for a die-casting is the price that secures for the buyer the utmost that he expects. The Doehler policy is first to make right the design, the quality of metal, the character of finished product, the delivery. Then the price is made right — a price which justifies the initial investment of time and experience, and the continued investment of skill and care. It is this policy which has won, and held, the volume of business that has made Doehler the largest producer of die-castings in the world. Send us your specifications.

**DOEHLER DIE-CASTING CO.**  
BROOKLYN, N. Y.  
CHICAGO, ILL. TOLEDO, OHIO.

**DOEHLER**  
The World's Largest Producer of  
**DIE-CASTINGS**



## Frictionless

**O**N the one hand, the balls — true to the ten thousandth part of an inch.

On the other hand, the raceways — unusually accurate and concentric!

Is it any wonder that ball bearings are the most perfect of anti-friction devices?

And, using a maximum number of maximum size balls within raceways of accurate contour and concentricity, it is a logical sequence that Gurney Ball Bearings should be accepted by Engineers as the best among their kind.

Valuable bearing data and experience are yours for the asking, thru the co-operation of our Engineers — write.

**Gurney Ball Bearing Co.**

Conrad Patent Licensees

Jamestown, N. Y.

(18104)

**GURNEY**  
**BALL BEARINGS**



## Should Reckon with His Costs-per-mile

Nothing sends up operating and maintenance costs like an inefficient or careless driver.

And nothing so well as a Hub Odometer *checks up* this incompetence—by the records of *mileage* per dollar of operating and upkeep cost.

If you're losing possible truck-profit through the fault of a driver (or a driver's ignorance) you'll know it—and *save it*—with a

### Veeder HUB ODOMETER

This instrument that makes the truck a better investment for the owner, makes it a better *sales-proposition* for the dealer, besides adding to his equipment business.



Parts subject to hardest wear are made of hardened steel. The studs upon which the dials revolve are of copper-nickel alloy, and will not rust or corrode. A patented stuffing box prevents oil or axle grease from leaking in on the dials—figures are always readable. The dials are locked and

prevented from turning except when driven by the mechanism, yet no springs are employed. The recording mechanism is sealed into the cap with a lead ring, forced in under pressure and giving the solidity of a weld. Registers up to 100,000 miles in tenths—then repeats.

*Goes on hub of front wheel and always registers forward, whether truck runs forward or backward; totals cannot be falsified. Regular model, adaptable to all standard trucks, \$20.00. Special Ford truck model, \$15.00. Brief literature on request.*

**The Veeder Mfg. Co.**  
10 Sargeant Street      Hartford, Conn.

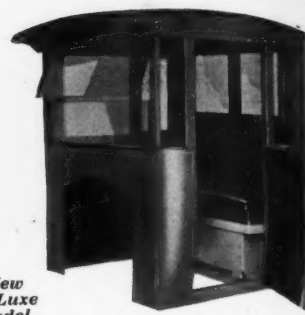
#### Sales and Service Stations in

Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Chicago, Ill.  
Cincinnati, Ohio  
Cleveland, Ohio  
Denver, Colo.  
Detroit, Mich.  
Indianapolis, Ind.  
Kansas City, Mo.  
Los Angeles, Cal.  
Montreal, Quebec

New York City, N. Y.  
Philadelphia, Pa.  
Pittsburgh, Pa.  
Rochester, N. Y.  
St. Louis, Mo.  
St. Paul, Minn.  
San Francisco, Cal.  
Syracuse, N. Y.  
Toronto, Ont., Canada  
Washington, D. C.  
—and other cities



Closed—for Cold  
and Stormy Weather



Open—Instantly  
for Fair Weather

New  
De Luxe  
Model

## Specify Better-Made WEATHERPROOF CABS

Buyers may not know what goes into the construction of a Weatherproof Cab. But they can see for themselves that it's an exceedingly comfortable, well-made, "classy" job. *And that's why a Weatherproof-equipped chassis will often clinch a truck sale for you.*

Made by the largest and oldest cab builders, concentrating on a quality product. Made to stay put in the hardest kind of service. Quality considered, these long-lived cabs are priced extremely low.

*We have an interesting proposition for live dealers.*

**Weatherproof Body Corporation**  
Corunna, Michigan

## Stop the Leaks— if you want increased profits.

Of all the sources of waste, an inaccurate, incomplete mailing list is one of the most prolific. Your printed matter is expensive to produce, the cost of mailing is a large item; hence it is vital that your messages reach *live concerns*. By using the



### Chilton Trade List

waste in postage and printed matter is reduced to the minimum. The percentage of returned, undeliverable mail matter is smaller than in any other list, as hundreds of users attest.

CHILTON TRADE LIST of Dealers, Garages and Repair Shops, is furnished free to annual advertisers in CHILTON AUTOMOBILE DIRECTORY. May we tell you just how you can secure it?

**Chilton Automobile Directory**  
Market and 49th Streets      Philadelphia, Pa.

## The Giant Gravity Dump

Perfect, durable and smooth, operates from driver's seat, by simply pulling a lever. The body will draw backwards and, as overbalance takes place, the bottom geared rails carry the load upwardly to a 70 degree dumping angle, whereby the great shock is eliminated.



Dealers: Sell Giant "Easy-Lift" Hoists  
Write for Our Proposition Today

### Auto Truck Service Co., Inc.

Manufacturers and Patentees of the GIANT LINE  
—GRAVITY, Side and Rear HOISTS and BODIES

946-948 Third St. MILWAUKEE, WIS.

GREEN & SONS COMPANY  
ENGINEERS AND CONTRACTORS  
825 MCCORMICK BUILDING  
CHICAGO, ILL.

January 10th, 1922

Mr. Theo. Bollnagel, Pres.,  
Auto Truck Service Company,  
946 - Third Avenue,  
Milwaukee, Wisconsin.

Dear Sir:-

In considering the problem of placement of the 60,000 cubic yards of concrete in our Marseilles Lock Contract on the Illinois Waterway, we found that all concrete material must be delivered on the north bank of the Illinois River, while the Lock was on the south bank. The river at this point is over 700 feet wide.

It was decided to put the mixing plant on the north side at the railroad and deliver the mixed concrete in dump trucks to the forms 1500 to 2000 feet away.

We gave all models of dump bodies careful consideration and finally installed bodies made by your concern on the chassis of the Bagel truck. These bodies handle a full cubic yard of mixed concrete, weighing 4090 pounds, dump and return to normal positions with ease and have proven their worth in all ways.

Certain features found only in them led to their selection, especially the curved rack and gear upon which they rotate when dumping. This rack and gear does away with all of the sudden stoppage and jerk which is so evident in other gravity bodies and which proves so hard on the chassis and frequently results in the complete dismounting of the body. It also causes the whole body to rise during the dumping motion, allowing complete rotation without striking the roadway upon which the truck stands.

We contemplate an increase in number of our fleet of trucks for this work next Spring and they will all have Giant Gravity dump bodies made by you.

Very truly yours,

GREEN & SONS COMPANY

*J. A. Green*  
Secretary and Treasurer

JAS CF

## GREATER PROFITS ON EACH SALE

### SELL YOUR TOWN OR CITY YOUR TRUCK EQUIPPED WITH CHILDS' APPARATUS

What kind of fire-fighting facilities does your municipality possess? If you don't know, investigate. Find out if it isn't possible to greatly improve them with the combination of **your motor truck** and Childs' Motor Fire Apparatus. Then sell that combination to the local authorities.

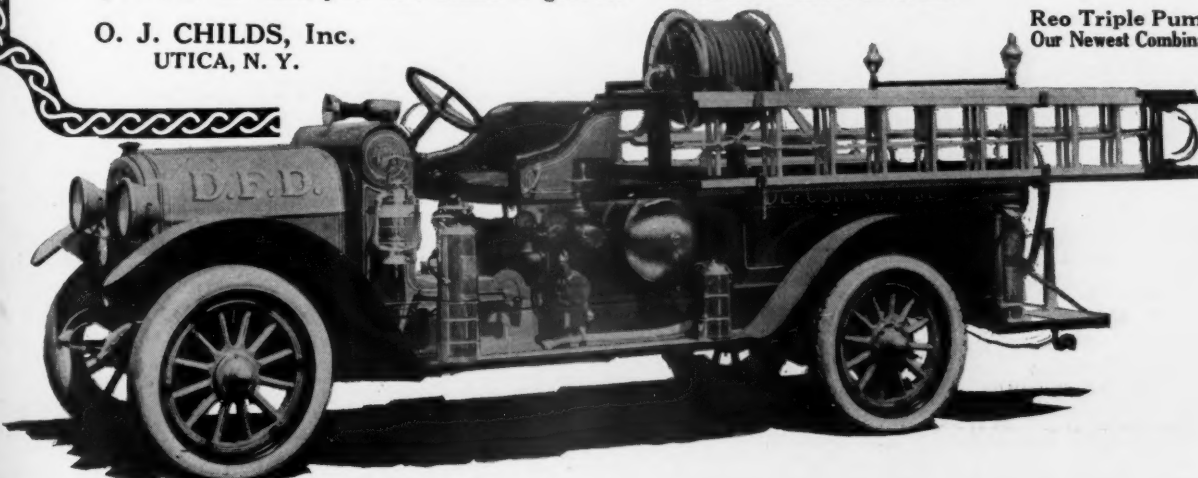
If you will do this, you will make a greater

profit for your efforts than you will by simply selling a motor truck; you will secure a business advertisement that will direct other sales your way; and you will really render your community a valuable service.

Let us send you our catalog and complete details about our new selling plan for Motor Truck Dealers in 1922.

O. J. CHILDS, Inc.  
UTICA, N. Y.

Reo Triple Pumper  
Our Newest Combination



# H. H. BABCOCK COMPANY

WATERTOWN,      FOUNDED 1845      NEW YORK.

## Babcock Bodies for Light Delivery Trucks



NO 235 W. H. AMBULANCE BODY.

H. H. BABCOCK CO.  
WATERTOWN N. Y.

Style Shown Here is No. 235 Wheelhouse Ambulance Body .

### DISTRIBUTORS:

*New York*  
A. J. Diefenderfer Corp.  
*Philadelphia*  
Diamond Body Co.

*Boston*  
Babcock Sales Co.  
*Pittsburgh*  
Pittsburgh Commercial Body Co.

*Chicago*  
C. J. Holdrege & Co.  
*Cleveland*  
H. H. Babcock Co.

*Detroit*  
Columbia Body Corp.  
*Worcester*  
Worcester Commercial Body Co.



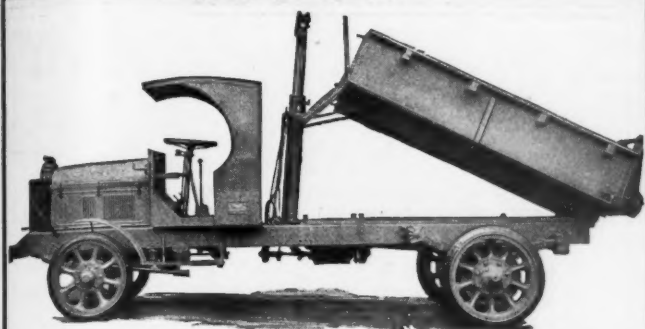
**IRON MOUNTAIN**

IRON MOUNTAIN CO.  
927 East 95th St.  
Chicago, Illinois.

$\frac{3}{4}$ , 1,  $1\frac{1}{2}$  and  $2\frac{1}{2}$  Tons.  
Designed right, built right.  
Guaranteed to give 100%  
satisfaction in strength and  
service.

Tell us about your require-  
ments and let us estimate  
your needs.





## STEWART'S STEEL DUMP BODIES

Built to withstand hard usage. Bodies made to give your truck additional service.

Standard and Special Steel Bodies. Let us quote on your requirements.

**THE STEWART IRON WORKS CO.**  
COVINGTON, KENTUCKY

Manufacturers of

**STEEL** BODIES CABS  
BUMPERS DASHES  
RADIATOR GUARDS



ESTABLISHED 1903

Every dealer receives, with the Atterbury Franchise, the co-operation of a permanent factory organization — permanence, which is a result of nineteen years' adherence to sound business methods devoted to building quality motor trucks exclusively.

Investigate Our Complete Line of  
1½, 2½, 3½ and 5 Ton Models

**ATTERBURY MOTOR CAR COMPANY**  
Buffalo, New York

# Schrader

Universal  
Tire Pressure  
Gauge - for  
Motor Truck  
Pneumatic  
Tires.

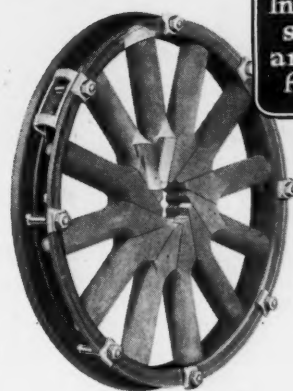
The greater the weight the greater the strain.  
Pneumatic Tires on Trucks are braced to carry their load by air. They need more air and a more exact quantity of air than tires on passenger vehicles, which have only a slight burden to carry.

The Schrader Universal Tire Pressure Gauge for pneumatic tires on motor trucks has an angle foot which permits its application to the tire valve no matter how small the free space between the hub and the felloe of the wheel. It is calibrated for measuring air pressure up to 170 pounds and can be used on tires up to 8½ inches.

Price in U. S. A.—\$1.75

**A. Schrader's Son, Inc.**  
BROOKLYN, N. Y.

## SCHWARZ WHEELS



Interlocked  
spokes  
and steel  
felloe

*Write for full  
particulars*

**The  
SCHWARZ WHEEL COMPANY**  
Frankford, PHILADELPHIA

# ALLSTEEL

## Cabs for Motor Trucks

Built of steel—welded and reinforced—good for years of service. Standard or special designs, shipped assembled or knocked down. Complete line of cabs, including open, semi and closed; seats, dashes, cowls, running-boards and floor-boards.



**Sheet Steel Products Company**  
Michigan City, Indiana

# FISK

## FLAT TREAD TRUCK CORD TIRES

**G**IVE much greater traction, because they have 35% more road contact than ordinary truck tires, size for size.

Especially designed side wall permits greater flexing and gives greater cushioning of load and mechanism.

The easiest-selling truck tire in the world.

**THE FISK TIRE COMPANY, Inc.**  
Chicopee Falls, Mass.

## Winther Trucks

A complete line  
of quality trucks  
nationally known  
and appreciated



**Winther Motors, Inc.**

*Manufacturers of*  
**Motor Trucks and Motor Cars**  
Kenosha, Wis.



*Built By*  
**MUSKEGON  
MOTOR  
SPECIALTIES  
COMPANY**  
MUSKEGON,  
MICHIGAN.

*By Reputation — "The Best Cam Shafts Made"*

# DENBY MOTOR TRUCKS



MODEL 33, 1½-2 TON BUS  
ONE OF FLEET OPERATED BY  
STAR TRANSPORTATION COMPANY  
MASON CITY, IOWA

**SWIFT—ECONOMICAL—POWERFUL**

**Denby Motor Truck Company**  
DETROIT, U. S. A.



## Spark Plugs

The plug with the  
**GREEN Jacket** and  
the **MICA Insulation**

## Peened Piston Rings

100 per cent efficient  
thirty minutes after  
installation

**Order From  
Your Jobber**

**Splitdorf Electrical Company**  
98 Warren St., Newark, N. J., U. S. A.

# ARCHIBALD WOOD WHEELS

## 50 Years of Knowing How

The motor truck you build today is a better one than you built one year—five years—ten years ago. We have been building better wood wheels for 50 years. Isn't it reasonable to suppose we can offer you superior quality and workmanship because of our ripe experience?

*Send Us Your Blueprints*

**Archibald Wheel Co., Lawrence, Mass.**



## Screw-Type HANDLE CONTROLLED

# JACKS

**EASIER TO USE—EASIEST TO SELL**  
**MADE IN THREE SIZES**



*Rugged Construction*

**One Ton**

**\$6.50**

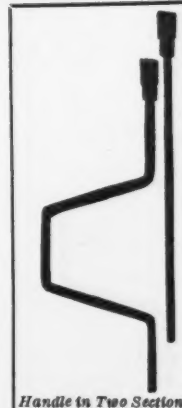
**Two Ton**

**\$8.50**

**Three Ton**

**\$12.50**

**Liberal Dealers' Discounts**



*Handle in Two Sections*

**Arrow Grip Manufacturing Co., Inc.**  
GLENS FALLS, N. Y.



## DELIVERS Satisfaction Wherever It Goes

In every land under the sun the Waukesha High Torque motors are doing their good work. A few of the many manufacturers now using these motors are:

Acason Motor Truck Co., Detroit, Mich.  
Doane Motor Truck Co., San Francisco, Cal.

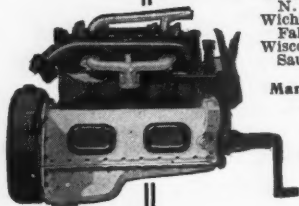
Tremendous power with little effort, little wear, and high pull at speeds where it is most useful, are the results of the Waukesha High Torque principle. Insist upon Waukesha motors in your truck.

**Waukesha**  
TRADE MARK

Fageol Motors Co., Oakland, Cal.  
Indiana Truck Corp., Marion, Ind.  
Luedinghaus-Espenschield Co., St. Louis, Mo.  
National Steel Car Co., Hamilton, Can.  
Old Reliable Motor Truck Co., Chicago, Ill.  
Republic Motor Truck Co., Alma, Mich.  
Sterling Motor Truck Co., Milwaukee, Wis.  
Stoughton Wagon Co., Stoughton, Wis.  
Seagrave-Longhead Co., Sarnia, Ont., Can.  
Triangle Motor Truck Co., St. Johns, Mich.  
Ward LaFrance Truck Co., Elmira, N. Y.  
Walter Motor Truck Co., New York City  
Watson Wagon Co., Canestota, N. Y.  
Wichita Falls Motor Co., Wichita Falls, Tex.  
Wisconsin Farm Tractor Co., Sauk City, Wis.

Manufacturers of Automotive Equipment. Write Us

**Waukesha Motor Co.**  
Waukesha, Wis.



## TRUCK DEALERS

### INVESTIGATE THE SCHACHT TRUCK SELLING FRANCHISE

*It is the Big Dealer  
Opportunity for 1922*

**The G. A. Schacht Motor Truck Co.**  
CINCINNATI, OHIO

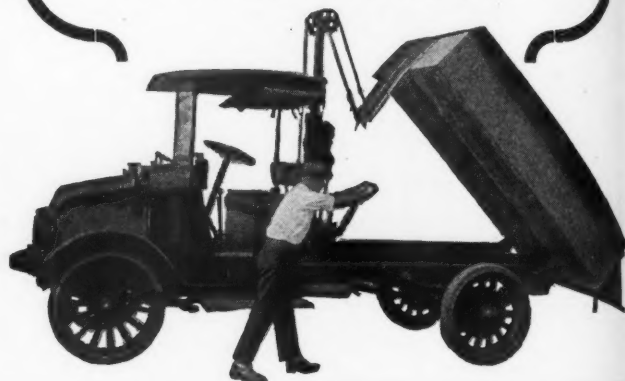
## A Selling Demonstration of the **ARCHER** STEEL DUMP BODY AND HAND HOIST

Show your customer how, with this easy-to-operate outfit, one man readily dumps the entire load. *Such a demonstration will sell the buyer*, because he will see with his own eyes the Archer's superior time and labor-saving features.

For road builders, coal concerns, grain merchants—for every business that needs efficient dumping equipment. Write for special dealer proposition.

*Our Standard Dump Outfits Fit All Makes of Trucks From 1 Ton to 5 Ton Capacity*

**ARCHER IRON WORKS**  
2450 West 34th Place, Chicago



## A. B. & B. Quality Tanks Sheet Metal Parts That Last

### For Quality Truck Makers

Ever stop to think how much buyers are influenced by the appearance of the sheet metal parts of your truck? The tanks—hoods—fenders—shields—dashes—tool boxes, etc.

Made by us, the sheet metal parts of your assembly will retain their handsome appearance indefinitely. Because we have the modern facilities, the skilled organization, the long experience to design them right—make them right—at right prices.

Samples of stock, accompanied by our estimates, will furnish the convincing proof. Write for them—and send us your specifications.

Soldered Tank  
Made of  
Terne Plate



**A. B. & B.**  
Sheet Metal Works  
Fond du Lac Ave., at 33d St.  
MILWAUKEE, WIS.



### Wilson-Built Truck Cabs

Will add to the appearance, the serviceability, and the sales value of the truck you build. They afford complete protection from rain, snow and wind.

They can be shipped knocked down for saving in freight costs and storage space. They reach you in priming coat, ready for final paint.

*Built in two standardized sizes, to fit any size truck chassis up to five-ton capacity. All-season type; instantly convertible to open or closed cab. Write for engineering data.*

**C. R. WILSON BODY COMPANY**

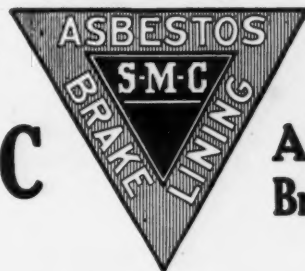
Detroit, Michigan

Who  
is carrying the load—  
you or your trucks?

**Pierce-Arrow**  
TRUCKS

The Pierce-Arrow Motor Car Company  
Buffalo, New York

2-ton \$3200 3½-ton \$4350 5-ton \$4850 fully equipped



**S-M-C**

**Asbestos  
Brake Lining**

### Generated Brake Heat is Really Cool

compared to the heat S-M-C has already come through. Heat units higher than any it meets in actual brake service are necessary to fix our Special Impregnating Compound.

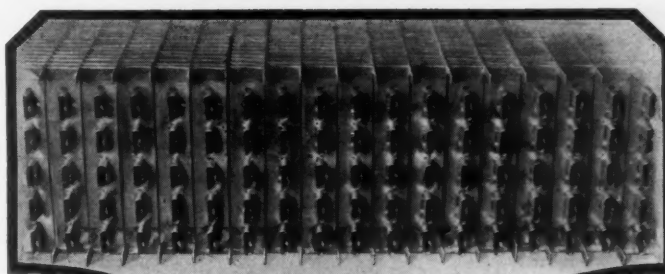
That's why S-M-C resists heat so successfully. It must meet its supreme heat test *before* it leaves the factory.

Generated brake heat alone will burn up or crumble linings that must meet their tests *after* they are on your customer's truck. Sell them instead S-M-C—the World's Famous Solid-woven Asbestos Brake Lining.

**STAYBESTOS MFG. CO.**

4602 Germantown Ave. Philadelphia, Pa.

*The Modern Factory, devoted exclusively to the manufacture of brake and transmission linings*



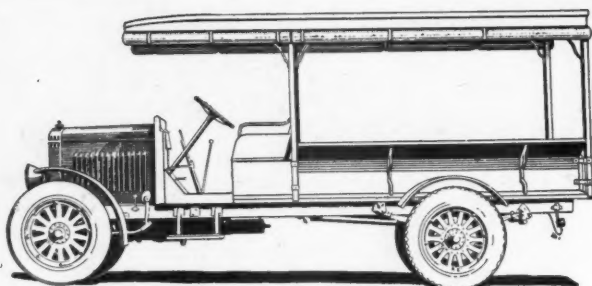
### See Their Cohesive Construction

This picture of a Bush Radiator Section shows how closely and carefully the parts are assembled. Each individual section is constructed into one strong fin and tube radiator. It is this great cohesive strength that enables Bush Radiators to bear constant road shocks and abuse.

By using a special, double-locked seam tube of our own construction, drawn at our plant, we are able to build the strongest truck, tractor or passenger car radiator that is made. Let us co-operate with your engineering department and send them samples of Bush Radiator Sections.

**Bush Manufacturing Company**  
HARTFORD CONN.

**BUSH**  
radiators



KISSEL'S TON EXPRESS

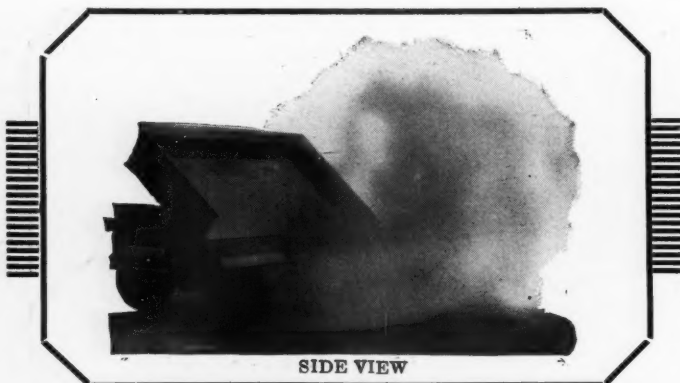
THE Ton Express—built for the retailer, merchant, wholesaler, farmer—is a regular One-Ton Kissel Truck in which strength and durability are combined to make it the best value on the market, irrespective of price.

**\$1585****Chassis—Standard Equipped****\$1985**

For chassis and body completely equipped with worm-drive rear axle, electric lighting and starter, cord tires, express body and top—completely painted. Prices F.O.B. Hartford, Wisconsin.

## KISSEL Motor Trucks 5 Sizes

The complete line of Kissel Trucks creates a sales opportunity that makes the Kissel Franchise in your territory doubly valuable. Also Special Road Builders' Truck, Hoppers, Measuring Boxes, Turntable, etc. Send for franchise details.

**The Kissel Motor Car Co.****Hartford****Wisconsin****Originators of the ALL-YEAR Cab for Trucks**

## Dumps a 3 Yard Load in 1½ Minutes

That's the kind of demonstration of the Automatic Side-Dump Body that convinces.

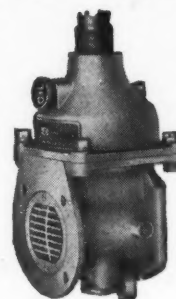
Show your prospects further that it dumps in any weather; can't get out of order; occupies all available space back of driver's seat; dumps all the load off without operating truck; fits any chassis.

Outwears any truck. Its many valuable time and labor-saving advantages emphatically influence customers to buy your trucks equipped with Side-Dump Bodies. Write for interesting dealer proposition.

**AUTOMATIC DUMP CAR COMPANY****Sales Department 7****Box 636****South Bend, Ind.**

### Automatic Side-Dump Body

## AGENTS WANTED



**WE** are looking for progressive companies all over the country to sell and install **DUPLEX** and **SIMPLEX GOVERNORS**.

Your territory may still be open.

Write **NOW** for our attractive proposition. And ask us about our **SIMPLEX-UNIVERSAL GOVERNOR** for Fords.

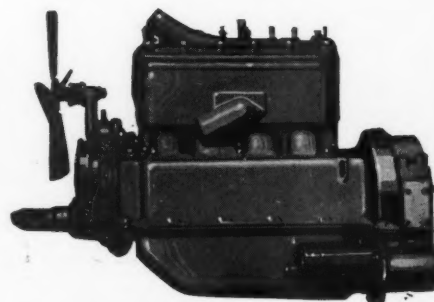
**The Duplex Engine Governor Co., Inc.**

36 Flatbush Avenue, Extension

**BROOKLYN, N. Y.**

Branches in  
**CHICAGO**  
**DETROIT**

SERVICE STATIONS  
IN ALL  
PRINCIPAL CITIES



**A** FINE four-cylinder engine, like the Lycoming Motor, answers the speed-truck manufacturer's problem and the owner's requirements by its outstanding dependability and durability.

The Lycoming Four is standard equipment in eight (8) of America's leading speed trucks.

Find out about the Lycoming Motor.

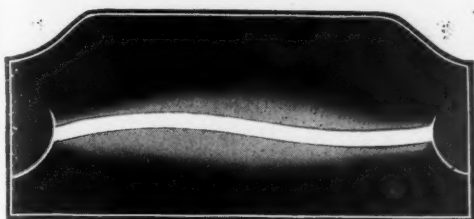
**Lycoming Motors Corporation**  
Williamsport, Pa.



## LYCOMING MOTORS

Standard Equipment on Eight Well-Known  
Speed Trucks





*The White-Hot Spark You Want, When  
You Want It—and Every Time!*

**Insure continuous service  
of your truck or speed-  
wagon by installing the  
ever-dependable Eisemann  
Magneto.**

*We have the necessary  
attachments.*

*Full particulars on request.*



**Detroit Brooklyn, N. Y. Chicago**  
Service Stations in Principal Cities



## Oversize Bearings

Silent, positive power transmission  
tells Three B Joint's service story.

This joint incorporates:

Oversize Bearings, oil fed centrif-  
ugally through a single opening.

Completely supported bushings.

And drop-forged, one-piece yokes.

Combined with absolute elimination  
of companion flanges, these qualities  
have made Three B Joints the choice  
of many of America's foremost  
automotive engineers.

*Investigate*

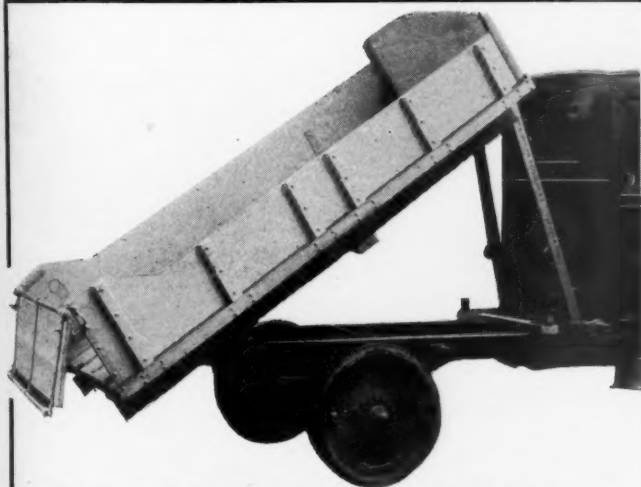
## Blood-Brothers Machine Co.

*Pioneer Builders of Universal Joints*

**Allegan**

F. Somers Peterson,  
Western Representa-  
tive, San Francisco,  
California

**Michigan**



## ROCK HAND HOIST

Lifting arms are bolted to the body cross-sills. Mast is  
made wholly from rolled steel and malleable iron, and  
its position is controlled by the pull of the cable. No  
track or guides required.

Mast and base are hot rivetted.

All bearings are packed with grease.

Both hoist and body hinge can be applied to any width  
of chassis without change.

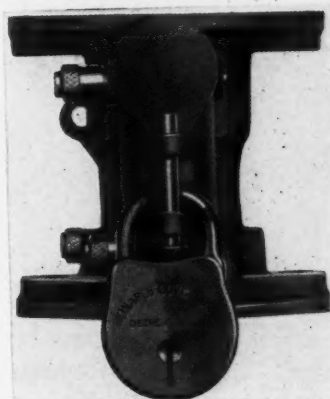
Hoist is fastened with clamps; no holes required. Space  
required between cab and body 9 inches. Height of  
hoist 66 inches. Weight 225 pounds. Guaranteed for  
loads of three and one-half tons.

Price, Complete With Body Hinge, \$85.00

**ROCK MANUFACTURING CO. WATERLOO, N. Y.**

## New Monarch

MODEL G



**Monarch Governor Company**  
**DETROIT**

# DURSTON TRANSMISSIONS



Year in and year out service and choice by leading automobile manufacturers prove the dependability of these units, which are built for use in passenger cars, speed wagons and trucks up to 1 ton capacity.

We invite your investigation of their adaptability to your requirements.

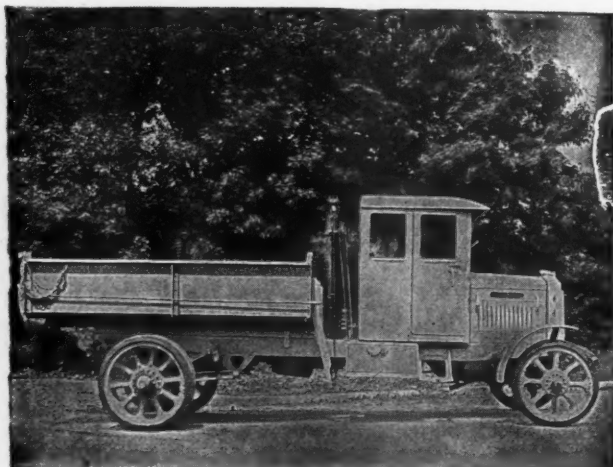
**DURSTON GEAR CORPORATION**  
29 Maltbie Street SYRACUSE, N. Y.

# STEERING ECONOMY

To inspect, repair or adjust the Wohlrab Steering Gear it is not necessary to remove it from the chassis—simply remove the top plate from the housing and all working parts may be removed and replaced through this opening.

A TIME SAVER  
TIME IS MONEY  
CONSIDER THE TRUCK OWNER

**The Wohlrab Gear Co.**  
Racine Wisconsin



## NATIONAL STEEL DUMP BODIES

Side and rear-end dumping bodies in all of the accepted types, for any make truck.

Your specifications cannot be too exacting. Send them to us.

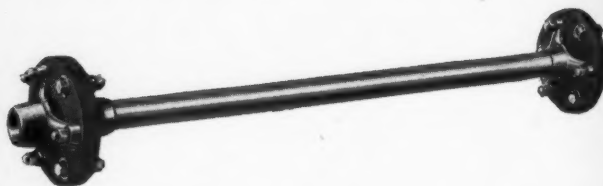
**National Steel Products Co.**

1611-1621 CRYSTAL AVE.

Kansas City

Missouri

# Snead Cushion Drives



**Snead Cushion Drives Are the Best Universal Joint Assemblies**

## *Because:*

Are half the weight.  
Require no lubrication.  
Are noiseless.  
Absorb shock and power impulses.  
Increase life of gears and bearings.

*Attractive Prices and Prompt Deliveries  
Write for Recommendations*

**SNEAD & COMPANY**

Founded 1849

100 Pine Street

Jersey City, N. J.

# We Have Moved

To better accommodate a rapidly increasing business, we have moved from our old plant at 1722-30 Tracy Ave., Kansas City, Mo., and are now in our

## New Location

**Sixteenth and Holmes Sts.  
NORTH KANSAS CITY, MISSOURI**

Our new plant is much larger, entirely modern, and equipped with better facilities for manufacturing and distributing Standard Steel products, including

### Steel Dump Bodies

### Hydraulic and Hand Hoists

### Oil Refinery, Mill and Elevator Equipment

### Boiler Casings

### Elevator Buckets

### Smoke Stacks

### Boiler Breeching

### Pavers' and Roofers' Kettles

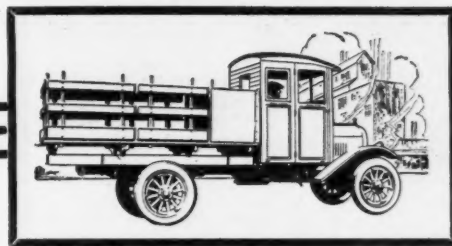
### Welded Tanks

### Grain Bins

Let us serve you. We are prepared to give you immediate service with Standard Steel quality.

## STANDARD STEEL WORKS

**Sixteenth and Holmes Streets  
NORTH KANSAS CITY, MISSOURI**



## For Most Haulage Requirements

You're in a position to meet most haulage requirements with the Pioneer One-Ton Speed Truck.

Fully as important as correct haulage capacity is the fact that in the Pioneer you offer a truck—not a camouflaged passenger car.

Note some of the *rugged truck parts*: Heavy 5" steel frame, electric heat-treated steel castings, worm-drive axle, 13 leaf spring, powerful, dependable motor, etc.

Now's the time to cash in on the growing popularity of Speed Trucks. *Represent a real one. Write for details.*

## Pioneer Truck Company

407-5 N. La Salle St. Chicago, Illinois

# PIONEER SPEED TRUCK

Speed Economy Endurance

# Flint FRONT AXLES

Capacities: 1000 Lbs. to 2 Tons

## Made by Front Axle Specialists

Present-day competition will not permit skimping on the quality of truck front axles.

If you make 1000 lbs. to 2 ton capacity jobs, put your front axle problems up to the Flint Motor Axle Company.

We specialize on quality front axles, within those capacities.

A modern drop-forge plant—special machinery—newest heat-treating equipment—thoroughly up-to-date metallurgical instruments—assure you quality front axles. And quantity production spells right prices and fast deliveries.

*What are your requirements?*

WE ALSO MAKE QUALITY FRONT AND REAR AXLES FOR PASSENGER CARS.  
WE SPECIALIZE ON HUBS ALSO

**FLINT MOTOR AXLE COMPANY**  
Flint, Michigan

BENDIX  
**ECLIPSE**  
DRIVE

for ELECTRIC  
STARTERS



AUTOMATIC ENGAGING  
& DISENGAGING

**194 Motor Car and  
Truck Builders  
Use It**

**ECLIPSE MACHINE CO.**  
ELMIRA - N. Y.

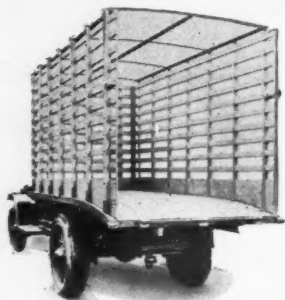


## EAGLE HEAVY-SERVICE BODIES

Four-Foot  
Rack

Six-Foot  
Rack

Covered  
Van



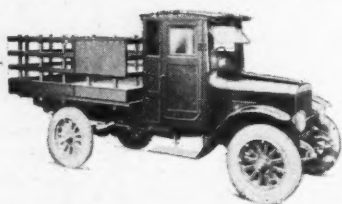
Removable  
Express  
Sides

Running-  
Board  
Express

Straight Platforms or Camelbacks

### Mr. Dealer!

We have a large variety of stock sizes from 8 to 17 feet in length, and 5 to 7 feet in width. These are Quality Bodies with many valuable and exclusive features of construction.

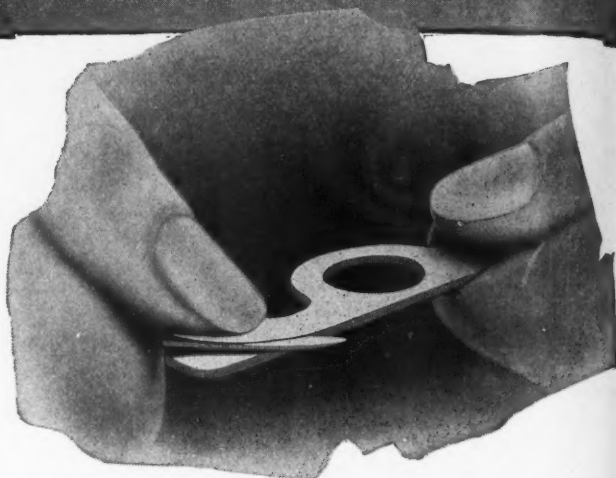


At the price offered our Speed - Special Rack Stake Body will interest you. Shown at left.

Ask for  
Dept. D Literature

THE EAGLE WAGON WORKS AUBURN  
NEW YORK

## HERE'S HOW-



Bearing adjustments made quickly—accurately—cheaply—with Laminated Shims

LAMINATED SHIM CO., Inc.

14th St. and Governor Pl., Long Island City, N. Y.

Detroit: Dime Bank Building

St. Louis: Mazura Mfg. Co.

Chicago: 1118 S. Michigan Ave.

# LAMINUM

## COUNTERBALANCED PARK CRANKSHAFTS

Patented July 10, 1917



We have  
shipped 134,537  
Counterbalanced  
Crankshafts up to  
March 1, 1922

THE PARK  
DROP FORGE  
COMPANY  
Cleveland, Ohio



ALL SIZES—ROUND—SQUARE  
SEAMLESS STEEL—LEAKLESS

— FOR —

## MOTOR BUSSES

STRONG—STURDY—SHOCKPROOF  
RIVETLESS—LEAKLESS—TESTED

INSURE YOUR PASSENGERS  
AGAINST TANK DANGERS

JANNEY, STEINMETZ & CO.  
PHILADELPHIA

Write for New Catalogue

## Business - Quickening New Prices

# WardLaFrance

### MOTOR TRUCKS

Capacity	Old Prices	New Prices
2½-3½ Tons	\$3590	\$2990
3½-5 Tons	4690	3990
5-7 Tons	5590	4590

You, as an experienced dealer, know that Ward La France exclusive design and construction constitute real selling features. Think what an overpowering selling advantage they will now give you over competition at the new low prices—if you are a Ward La France dealer!

*Get All the Selling Facts—Write to*

**WARDLaFRANCE TRUCK CORP., Elmira, N.Y.**

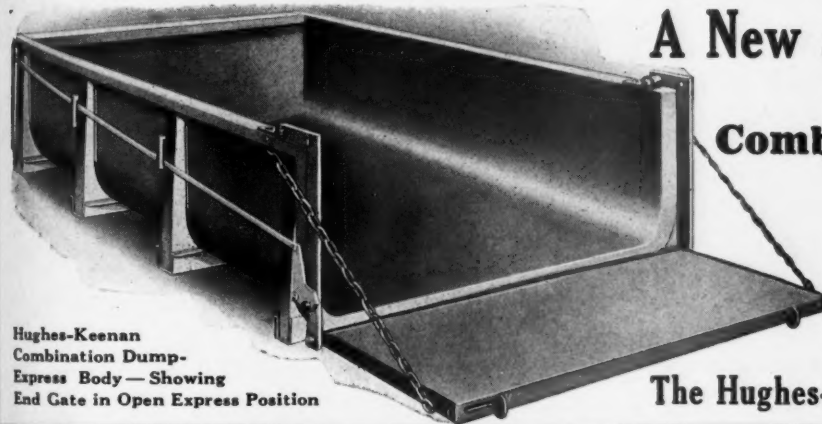
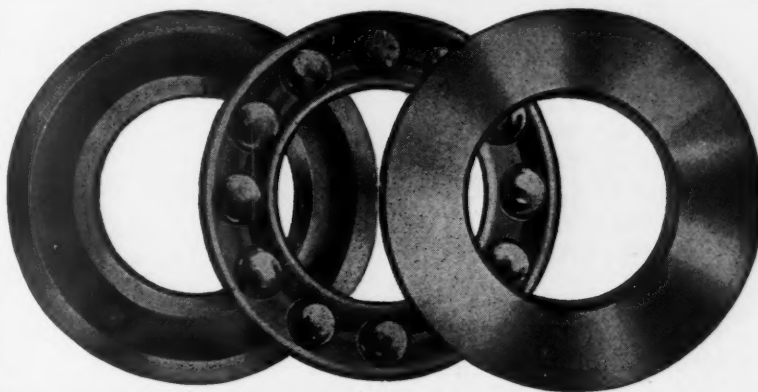
We offer our services to the engineering fraternity on layouts requiring Thrust Ball Bearings. Our broad engineering experience in Ball Bearings is at your disposal. Thrust Ball Bearings manufactured to your requirements.

"Star" Ball Retainers for Thrust, Magneto and Cup and Cone Bearings.

**The Bearings Co. of America**

LANCASTER, PENNA.

Detroit, Mich., Office  
1012 Ford Building



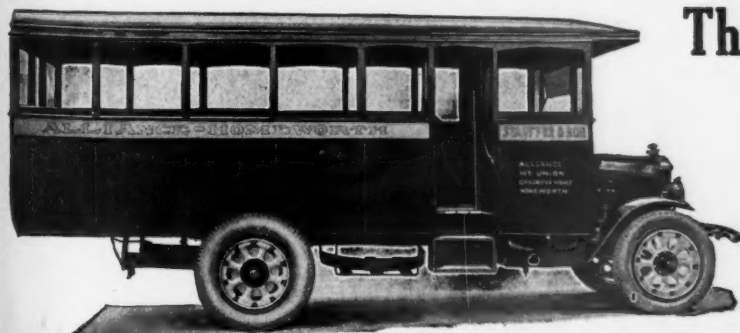
Hughes-Keenan  
Combination Dump-  
Express Body—Showing  
End Gate in Open Express Position

## A New and Remarkable Line of Combination Dump-Express BODIES

At an Astonishingly Low Price

*Write for Complete Information*

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## The Whitfield Bus Body—

- built by a firm of famous body builders,
- combines strength, lightness, and pleasing lines,
- offers newest features of construction for passenger safety and comfort.

*Write for Full Particulars*

**W. H. WHITFIELD & SON, PENN YAN, N. Y.**

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## WORM-DRIVE MOTOR TRUCKS

1922 Models and 1922 Prices

Model A, 1 to 1½ ton, equipped with pneumatic tires and electric lights..	\$1600
Model B, 1½ to 2 ton.....	2000
Model D, 2 to 2½ ton.....	2400
Model C, 2½ to 3 ton.....	2750
Model F, 3½ to 4 ton.....	3150
Model E, 5 to 6 ton.....	4250

Turn to the detailed truck specifications in this issue of the **COMMERCIAL CAR JOURNAL** and compare our specifications and prices with competing lines. **DAY-ELDER TRUCKS SELL BY COMPARISON.** Write for our strong selling plan and liberal dealer proposition.



**DAY-ELDER MOTORS CORP.**  
NEWARK, N. J.

**Joint Dealers' Agencies**  
at desirable points are open for

## DETROIT TRAILERS

Reversible, Non-Reversible, Semi-Pole, Dropped Frame, Industrial and Passenger Car—

### Mansfield Steel Corporation

Line of Gravity Dump Bodies, Flat-Bottom Bodies with Power or Hand Hoist; Trailer or Towing Attachments for Trucks; Radiator Guards and Front Bumpers (listed as standard by Underwriters' Laboratories) and other desirable and good selling devices. Address either:

**Detroit Trailer Company**  
or  
**Mansfield Steel Corporation**  
Both Located at  
**954 East Milwaukee Ave., DETROIT, MICH.**

*Our mammoth shops are equipped to handle nearly everything in the transportation line*

## SCHMIDT MOTOR TRUCK TRACTION DEVICES

### Dealers

These long-wearing Traction Devices can also be used as Mud Hooks, Tow Chains, Sling Chains, Pull-Out Chains, Loading Chains, Endless Chains, Hoisting Chains, Ring Chains, Tail-board Chains.

*You Will be Interested in Our Liberal Proposition Write*

### 3 Safety Devices in 1

Because the units can be formed into three different devices—three positions of wear—they last considerably longer than ordinary chains.

As pictured, the chain is attached in the semi-floating position. The ring around the hub prevents hooks creeping to the tire tread.

In the full-floating position, the units are placed on wheel in ladder formation.

As anchored units, the end and center of chain are subjected to wear.

*How Many Can You Sell This Spring?*



**Charles D. Schmidt Co.**  
Broadway, Cor. Canal Street  
New York City

# NOTICE

**TRUCK AND BODY DISTRIBUTORS**

**MANDT**  
OVER 30 YEARS A MARK OF QUALITY  
**AUTOMATIC DUMP BODY**

**Built in All Sizes**

**Write for New Low Prices**

**MANDT COMPANY**  
CONSTRUCTION AND HAULAGE EQUIPMENT  
**KEOKUK-IOWA**



## You Get Rapid Turnover With WEADER BODIES for Fords

Turnover is what counts—and you certainly get rapid turnover with Weader Bodies for the Ford Chassis. Why? For three reasons:

- 1st—Weader Body construction is high-grade thruout. Materials, design and workmanship are such as your customer would expect only in units made for the costliest trucks.
- 2nd—Weader volume production permits the marking of such a low price on these fine Bodies as will amaze your customer. A price which competition cannot meet, quality considered.
- 3rd—Sincere, worth-while factory co-operation is continuously working to make sales easier for Weader Dealers.

Want the proof? Want to hear what enthusiastic Weader Dealers say? Want full details? Write now.

**WEADER BODY CO., McClure, Pa.**

A typical Weader Body for Ford One-Ton Truck Chassis. 20" panel, length 96" back of driver's seat, 44" wide, equip with running-board and fenders.



# WYMAN-GORDON

## The Crankshaft Makers

**Worcester Division**  
WORCESTER, MASS.

**Ingalls-Shepard Division**  
HARVEY, ILL.



Peerless Hoist, Showing Body Hitch  
Worm and Gear, Machine Cut  
We Furnish Body Hitch

## The Only Logical Choice for Dealers

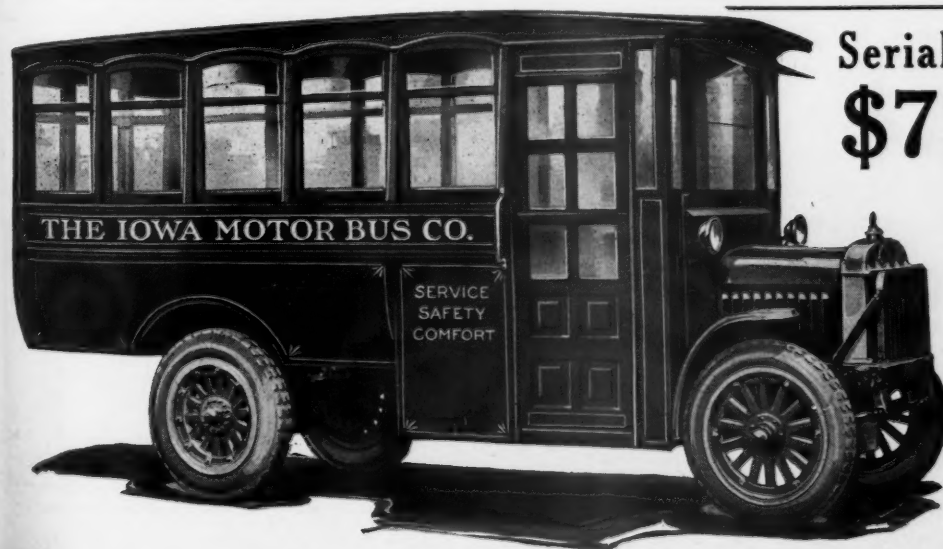
There is every reason why the Peerless is the logical hoist for you to sell. The discount is so liberal that your time is well paid for and a handsome profit is earned on every sale. The price appeals to your customers, as it is from one-third to one-half lower than the cost of other hoists. But profit and price would make little appeal if you did not conscientiously believe that the

## Peerless Hand Hoist

was superior in mechanical perfection and operation to any other lifting apparatus made. Rest content! It is the only efficient hoist that can be attached to either steel or wood bodies. It is the only efficient hand hoist that sells at a moderate price. These are pretty strong reasons why you should consider its sales possibilities. An operator can hoist from one to four tons in from one to four minutes. What more could be required on speed? You are getting calls for hoists and are often undecided as to which hoist to recommend. We'll tell you why the Peerless fills the bill every time. Will you let us?

Alsteel Bodies Guaranteed to Take Care of 100% Overload Under Rough Usage

**The Auglaize**  
**Hoist and Body Company**  
New Bremen, Ohio



**Serial 70—14 Foot Body**  
**\$776.00 F. O. B. FACTORY**

Same as Shown at Left

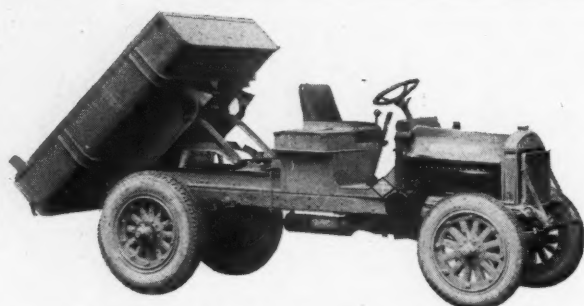
Serial 70—16 Foot Body - \$812.00  
Serial 70—18 Foot Body - 911.00

### Our Serial 50—Lengthwise Seat Body

12 Ft. Body—\$420.00 f.o.b. Factory  
14 Ft. Body— 447.00 f.o.b. Factory  
16 Ft. Body— 473.00 f.o.b. Factory

Send for Complete New Folder in Colors and New 1922 Price List

**GREENFIELD BUS BODY CO.**  
210 Washington Ave., GREENFIELD, OHIO



2 to 2½ yds. Capacity, \$450.00, Plus War Tax,  
f. o. b., Detroit

## One Billion Dollars for New Roads in 1922

### JUST THREE SECONDS

to Dump and Return to Loading Position

**DRIVER DOES NOT LEAVE HIS SEAT**

TAIL GATE OPENS AND CLOSSES AUTOMATICALLY with the action of the body. Nothing to assemble, installed in thirty minutes, no mechanism to get out of order, no lay-off for repairs.

#### EXTRA PROFITS

over other dumps will buy a new truck each four years because Hand Hoist requires 3 minutes to dump one load. Winsor Gravity requires only 1½ minutes to dump 30 loads.

**DISTRIBUTORS WANTED**

**AUTOMOTIVE UTILITIES CORPORATION**

408 Detroit Savings Bank Building

DETROIT

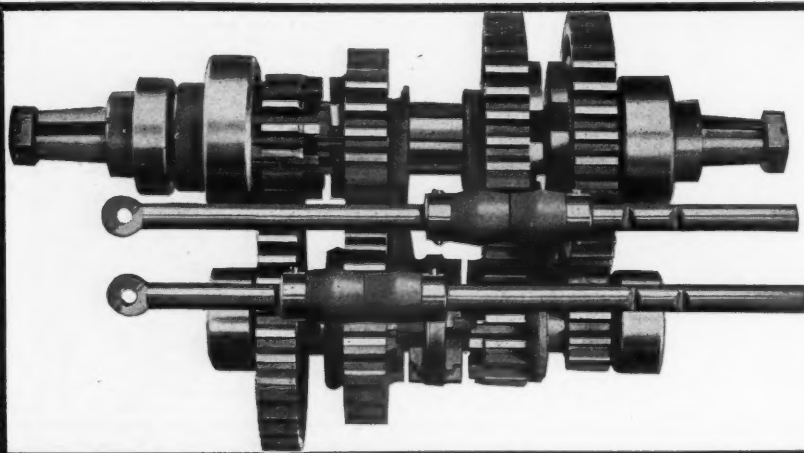
MICHIGAN

# OUR PHENOMENAL GROWTH

is the Result of  
**Our Determination to Serve**  
We Specialize in  
**Distinctive Designs**

Our Engineering Department is at Your Service  
Write or Forward Us Your Blueprints

**The Lima Sheet  
Metal Products Co.**  
LIMA, OHIO



## COTTA GEAR CO.

### INDIVIDUAL CLUTCH TRANSMISSIONS

FOR

**3½, 5 and 7 Ton Trucks**

Notice the short, compact and husky construction.

Long bearings in the loose gears.

**COTTA GEAR CO., Rockford, Ill.**



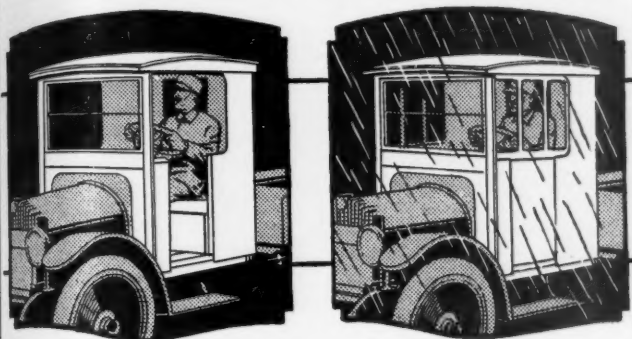
## THE DUTY TRUCK

A powerful, rugged TWO-TON TRUCK, with overhead valve motor; heavy standard units; S. A. E. specifications.

Chassis, with bumper, tool box, lights, seat and tool equipment. Price, \$1590 f. o. b. factory.

**DUTY MOTOR CO.**

**Elgin, Illinois**



## An Open-Closed Cab!

When the doors and windows of the Highland Sliding door cab are in their wells you have an open cab—unobstructed vision and perfect freedom of entry and exit. When they are closed protection from any weather is absolute. This is the ideal cab for all climates and all seasons.

Wood is used where wood is best; and steel where steel is best. This is the lightest cab Highland ever built—rattleproof, durable and well finished.

Two sizes to fit any chassis of any make.

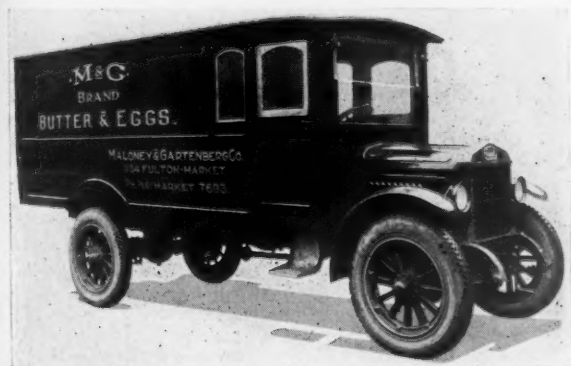
*Write for Literature*

**The Highland Body Manufacturing Company**

403 Township Ave., Elmwood Place, Cincinnati, Ohio

Stocks Also at Chicago, New York, Baltimore, Boston, Richmond, Springfield, St. Paul, Milwaukee, Pittsburgh

# HIGHLAND Cabs



Eugol, the one-ton speed truck, is making real—not paper—profits for Eugol dealers. Why? It gives the maximum of service; requires minimum of dealer servicing.

*Some Choice Territory Still Open. Write*

**Eugol Motor Truck Company**

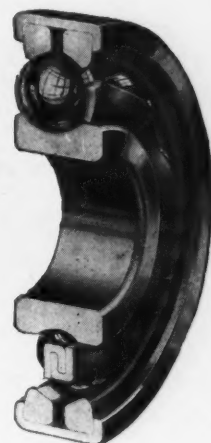
General Offices: 116 S. Michigan Ave.

CHICAGO, ILL.

Cable Address: "Eugol Chicago"

# EUGOL SPEED TRUCK

## *Schatz* "UNIVERSAL" Registered Annular U.S. Pat. Off. BALL BEARING



For combined radial and thrust loads, where precision and durability are essential, the correct three-area contact design gives 300-400% greater thrust capacity.

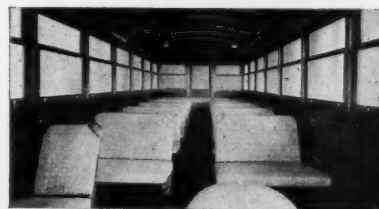
**Greater Precision Less Friction  
Longer Life**



**The Federal Bearings Co.**

Incorporated

Poughkeepsie, N. Y.



SIDE  
SEAT  
BODIES

CROSS  
SEAT  
BODIES

**"BETTER BUILT 'BUS BODIES'"**

The performance of our Bus Bodies in service constitutes our greatest claim for future business. Remarkable in-built durability and rugged strength enable them to maintain a uniform, handsome appearance under all the various working conditions to which they are subjected.

Send for complete  
catalog and prices

**BUS BODY CORPORATION**

*Exclusive Bus Body Builders*  
Evansville Indiana, U. S. A.



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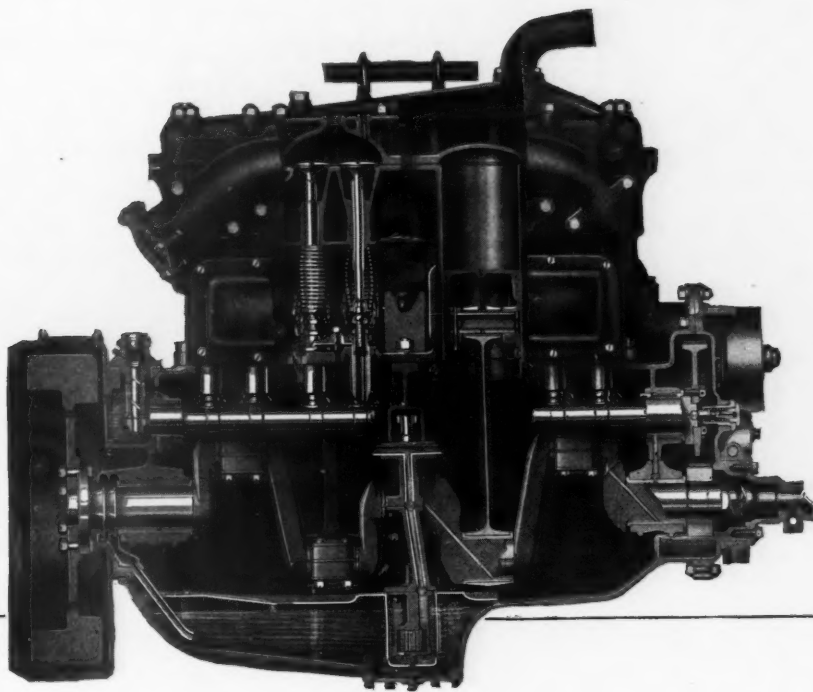
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## BUDA ENGINES

*"Built for a Purpose"*

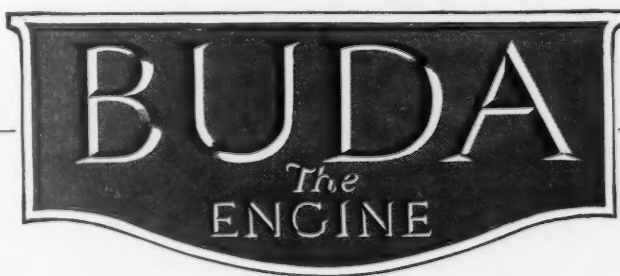
There is a Buda engine for every hauling need whether it be a  $\frac{3}{4}$  ton speed truck or truck tractors with capacities up to 15 tons.

"Built for a Purpose," Buda engines embody no freakish ideas or experiments. They are built to do the automotive work of today, to meet adequately the present demands which increased speeds and load-carrying capacities have placed upon heavy-duty engines.

We will gladly send Buda descriptive bulletins on request.

THE BUDA COMPANY, HARVEY <sup>CHICAGO</sup> ILL.  
ESTABLISHED 1881

B U I L T F O R A



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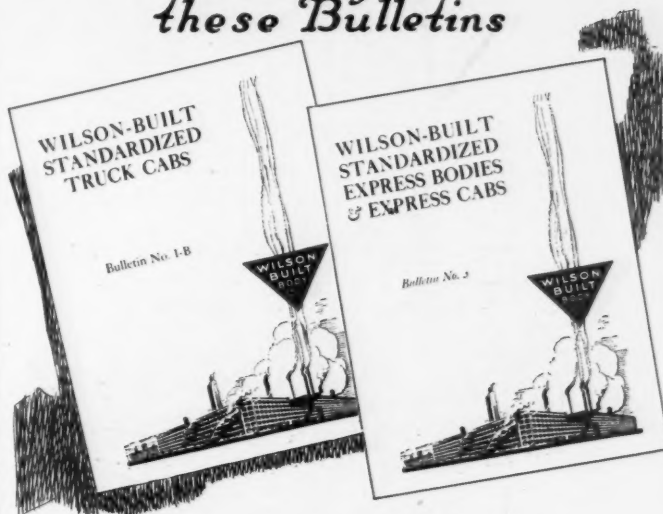
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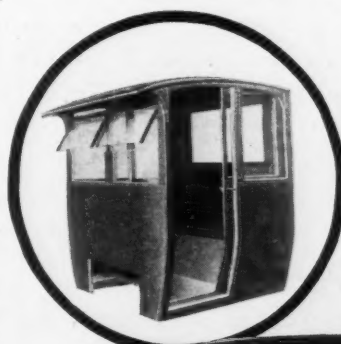


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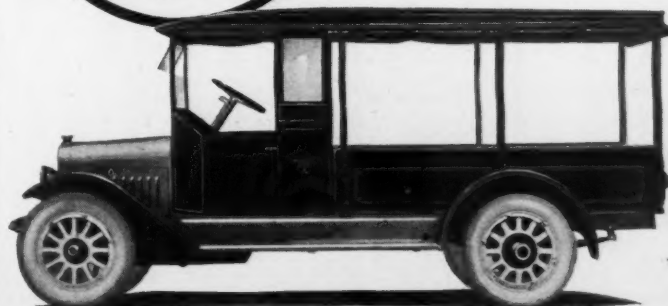
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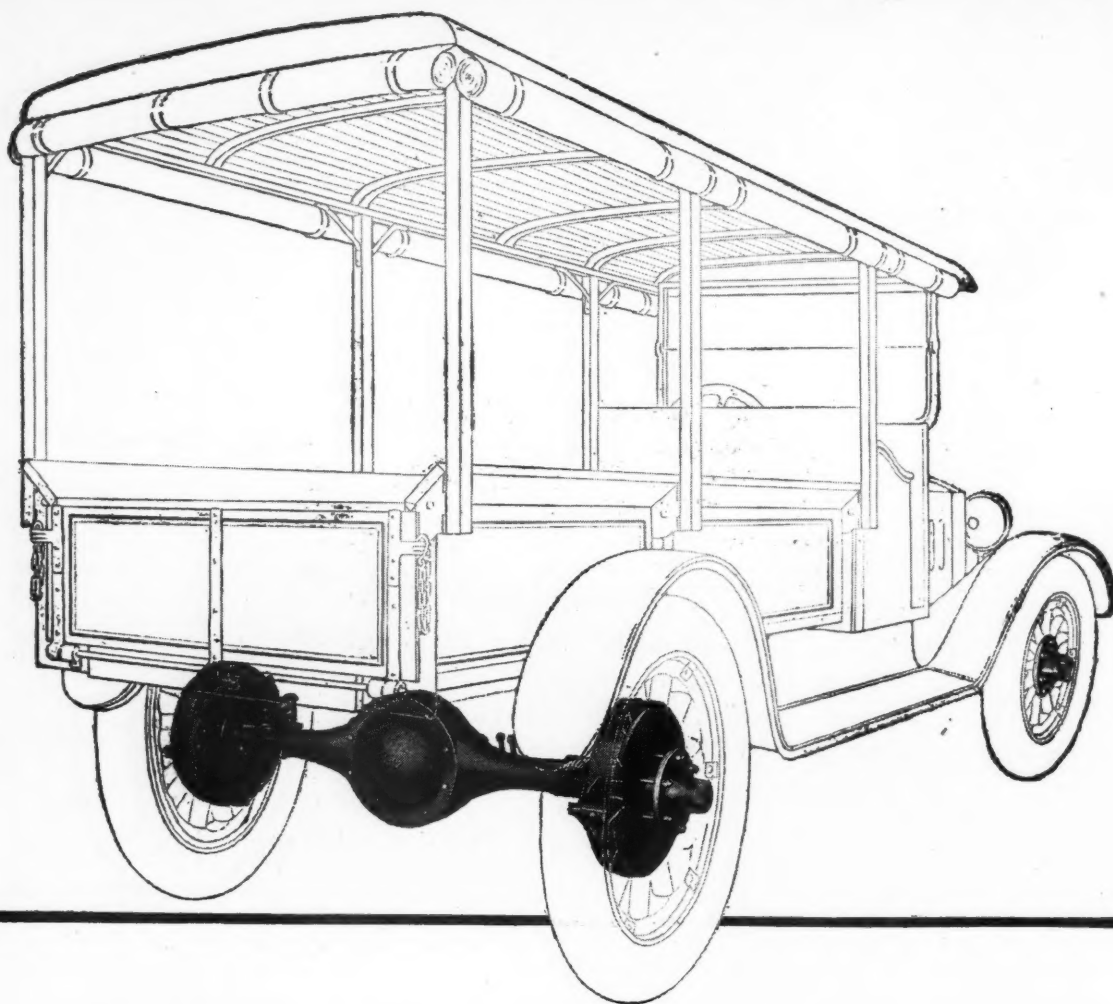
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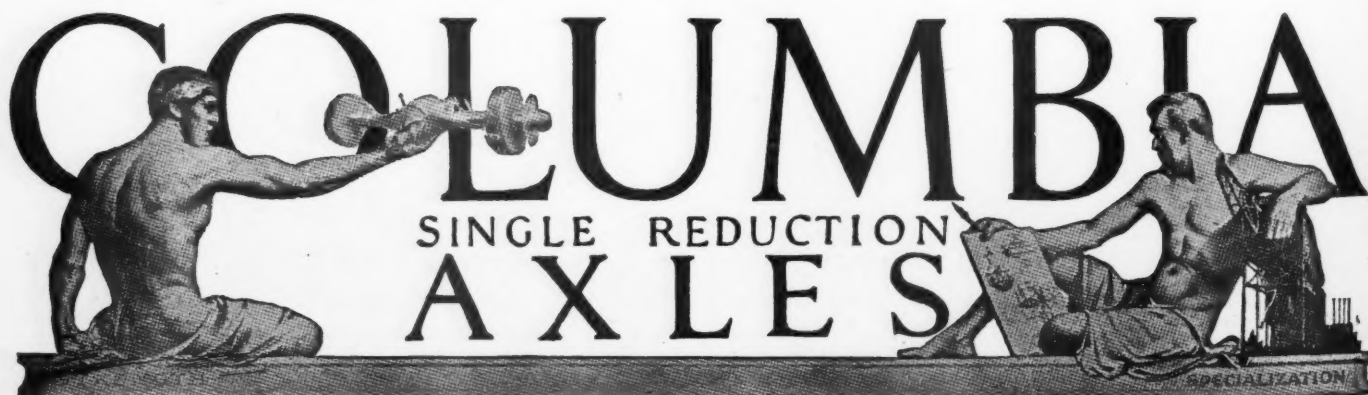
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